

COLLADONUS AND RELATED GENERA OF MEXICO AND CENTRAL AMERICA
WITH NEW TAXA AND SYNONYMY (HOMOPTERA: CICADELLIDAE)

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ABSTRACT.—A study of the genus *Colladonus* and related genera of Mexico and Central America was based almost exclusively upon the examination of nearly the entire type series of all the *Idiodonus* species described by the late Dr. D. M. DeLong. All species referable to *Colladonus* are redescribed, and illustrations of the male genitalia are given for the first time. A key to the species of Mexico and Central America is also included. A brief discussion of the distribution and phylogeny of the group is given.

Among 35 species described by DeLong in *Idiodonus*, 21 belong in *Colladonus*, 1 is assigned to *Ollarianus* Ball, 1 to *Paratanus* Young, 2 to *Bonnejanya* Oman, 2 are retained in *Idiodonus*, 5 are relegated to four proposed new genera, and the remaining 3 have uncertain generic position. One new combination in *Colladonus* is proposed, and 16 names are treated as new synonyms. Eight new combinations are proposed in the treatment of related genera. New genera include: *Paracolladonus*, *Paracrassana*, *Paranurenus*, and *Jaacunga*. The subgenus *Angulanus* DeLong is elevated to generic rank.

The genus *Colladonus* Ball was first revised by Nielson (1957), who treated primarily the Nearctic species north of Mexico and one known single Palearctic species. After the major part of the revisionary work was finished, a number of Mexican leafhoppers described by DeLong (1946) in the genus *Idiodonus* Ball were studied, and several species were found referable to *Colladonus*. Twelve species were listed as new combinations and treated as *incertae sedis* in the appendix of my 1957 paper. Two species-level names were suppressed as new synonyms of an older name. Time did not permit a more thorough study of suspected additional synonymy and possible dissociation of the sexes between the female holotype and male allotype of several species in this group.

The descriptions of nearly all of DeLong's *Idiodonus* species were based on females, and a female specimen was designated as the holotype in nearly all cases. Illustrations were limited to a dorsal view of the head and thorax, and a ventral view of the female seventh sternum, which with color patterns formed the basis of his classification. In a much later paper, DeLong (1983) described additional species of *Idiodonus* from Mexico and Bolivia; then he (DeLong 1984) prepared a revised key to all the known species in the New World, separating them on the basis of color patterns and configuration of the female seventh sternum.

Although the female seventh sternum alone is a useful character for separating some species of *Colladonus*, its utility is enhanced only in combination with male genital characters. This is particularly true in certain species that show similarities in male characters that require support by associated female seventh sternal characters to differentiate these species.

In this study the entire type series, with the exception of a few specimens, of all species of *Idiodonus* described by DeLong were examined with attention given to association of the female holotype and her counterpart male allotype or male paratype specimen. A few cases of improper sex association were found, and these are discussed below. All species found referable to *Colladonus* are redescribed, and illustrations of the male genitalia are given for the first time. A key to the species of Mexico and Central America is also included. Six new species of *Colladonus* are described from that region. One new combination is proposed, those treated as new combinations in my earlier paper are confirmed, and 16 names are treated as new synonyms under their respective nominate species-level name. *Colladonus delongi* described by Linnavuori (1959) from Panama and based on an apparent mislabeled and misdetermined female specimen was treated as a new synonym of *Colladonus montanus* (Van Duzee) by Nielson (1966).

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Among 35 species described in *Idiodonus* by DeLong, 21 belong in *Colladonus* (including 14 species treated in my earlier work), 1 is assigned to *Ollarianus* Ball, 1 to *Paratanus* Young, 2 to *Bonneyana* Oman, 2 are retained in *Idiodonus*, 5 are relegated to four proposed new genera, and the remaining 3 have uncertain generic position. One species, *I. plummeri* DeLong, is considered the only valid and correctly placed species among all those described in *Idiodonus* by DeLong. *Idiodonus bakeri* DeLong is suppressed as a new synonym of *plummeri*. DeLong treated 6 older species of *Idiodonus* in his 1946 paper, 5 of which were subsequently assigned to three other genera by Oman (1949). Descriptions of four new genera, *Paracolladonus*, *Paracrasana*, *Paranurenus*, and *Jaacunga*, are provided with redescriptions and illustrations of the species assigned to their respective genus. The subgenus *Angulanus* DeLong is elevated to generic rank.

DISTRIBUTION OF *COLLADONUS*.—The origin of the genus appears to have been centered in the southern highland range of the Nearctic region (Rocky Mountain subregion) in Mexico where radiation northward produced the bulk of species in United States. Only one species is known to occur as far south as Panama, and one is widespread in the Palearctic region. Fifteen species occur in Mexico proper, only one of which ranges into Arizona. Among 44 species in United States (including Alaska) and Canada, seven occur marginally in Mexico (Bliven 1954, Nielson 1962, 1966). Most of the species of *Colladonus* occur on trees and shrubs in the mountainous regions of western United States and Canada.

Genera closely allied to *Colladonus* (*Nigridonus* Oman, *Caladonus* Oman, *Bonneyana* Oman, and two new genera) are known only from Mexico and the extreme southwestern mountain areas of the United States, lending support to the Mexican origin of the genus *Colladonus*.

With respect to the New World distribution of *Idiodonus*, it is doubtful that the genus occurs south of Mexico. Members of the genus are more common in the United States than in Mexico.

CONSIDERATIONS OF PHYLOGENY.—Nearly all female *Colladonus* of species that occur north of Mexico have a spatulate process on the caudal margin of the seventh sternum.

None of the species in Mexico and Central America possess this structure, suggesting that it is a derived (apomorphic) character. The spatulate process thus far has attained its highest development in *C. furculatus* (Osborn) that occurs in the eastern United States and Canada. There does not appear to be any correlation between the presence of this structure and male genital structures, indicating that its development was independent of the evolutionary development in male structures. However, there appears to be a correlation between the absence of the spatulate process on the female seventh sternum and a short, male pygofer spine among the species (United States, Canada, and Palearctic region) that possess these characters, viz., *belli*, *youngi*, *brunneus*, and *torneellus*. This relationship does not hold true for species in Mexico and Central America, suggesting that the northern population evolved separately from its sister population in the United States and Canada that does not exhibit this relationship.

About half of the *Colladonus* species have crowns that are produced, which is considered a more primitive condition. Associated with this character is the relative position of the gonopore on the shaft of the aedeagus. A gonopore basad of the midlength of the aedeagal shaft is considered more primitive, whereas a position distad of middle is more advanced. About 82% of the United States and Canadian species bearing a basal gonopore have a produced crown, whereas all of those species bearing a distal gonopore have a short, rounded crown. Among the Mexican and Central American species, nearly all species with a basal gonopore have a produced crown, whereas all species with a distal gonopore have a short, rounded crown. Each of those sister groups apparently evolved independently.

Key to Males of *Colladonus* of Mexico and Central America

- 1. Pronotum with yellow or ivory, (sometimes pale) *transverse* band 2
- Pronotum without such band 13
- 2(1). Pygofer with a very short, exposed spine on caudal margin, exposed length about twice as great as exposed basal width 3
- Pygofer with moderately long to very long, exposed spine on caudal margin, exposed length nearly three times to more than five times as great as exposed basal width 8

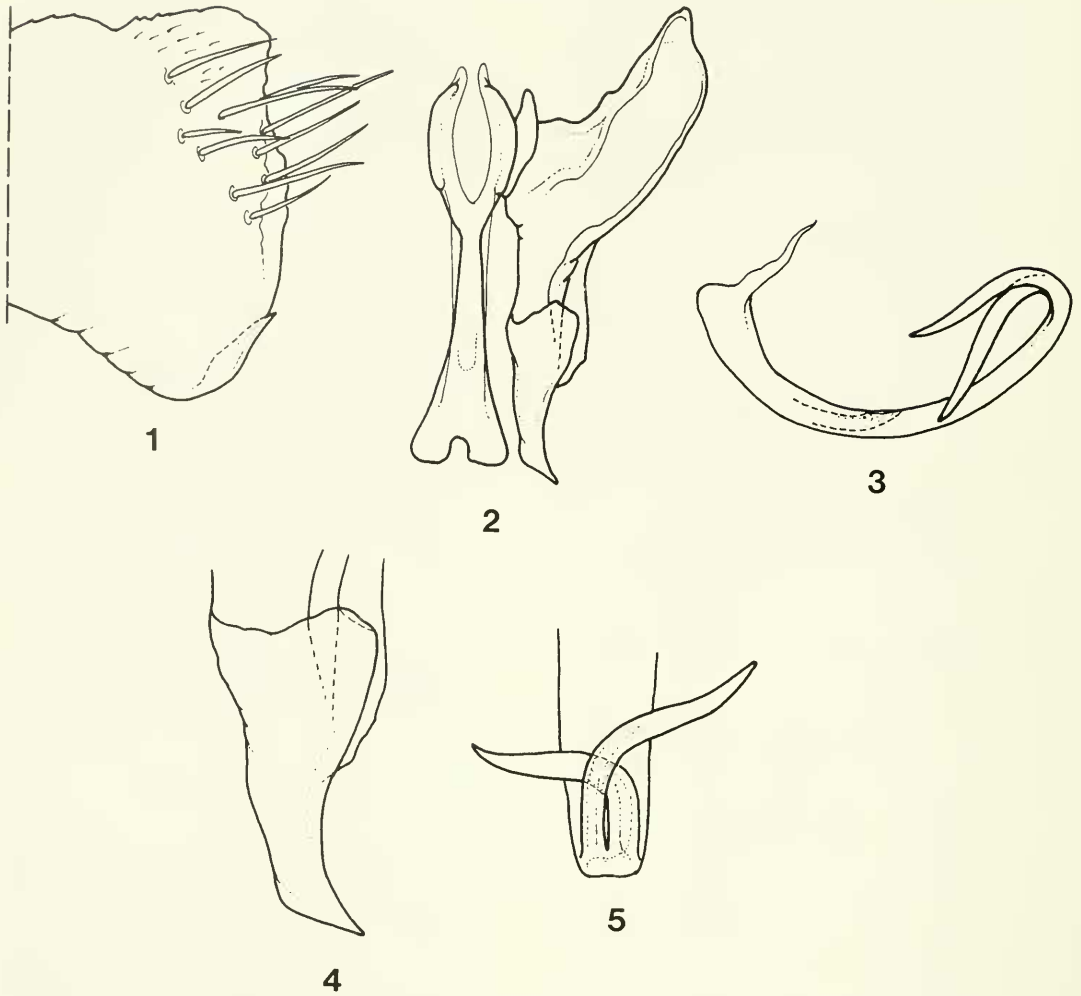
- 3(2). Pygofer spine near middle of caudal margin; connective short, not reaching to apex of style; aedeagus with bifurcated processes long, reaching to midlength of shaft 4
- Pygofer spine distinctly basad of middle of caudal margin; connective long, reaching to apex of style; aedeagus with bifurcated processes short, not reaching to midlength of shaft *albocinctus* (DeLong)
- 4(3). Pygofer spine near middle or just below middle of caudal margin 5
- Pygofer spine distinctly above middle of caudal margin *belli* (Uhler)
- 5(4). Pygofer with caudoventral margin smooth; style with apical stylar spine 6
- Pygofer with caudoventral margin toothed or serrate; style with subapical stylar spine *serratus*, n. sp.
- 6(5). Aedeagus with bifurcated processes long, extending beyond gonopore in lateral view 7
- Aedeagus with bifurcated processes short, not reaching to gonopore in lateral view *fasciaticollis* (Stal)
- 7(6). Style with apical shaft broad and lateral margins parallel, stylar spine apical and projecting laterad *ultimus*, n. sp.
- Style with apical shaft narrowed distally, lateral margins not parallel, stylar spine apical and projecting laterodistad ... *tolucensis*, n. sp.
- 8(2). Pygofer spine with exposed length not more than 4 times exposed basal width 9
- Pygofer spine with exposed length more than 5 times exposed basal width 11
- 9(8). Connective short, not reaching to apex of style; aedeagus in lateral view with bifurcated process short, reaching to about midlength of shaft 10
- Connective long, reaching to about apex of style; aedeagus in lateral view with bifurcated processes long, extending beyond midlength of shaft *dampfi* (DeLong)
- 10(9). Pronotum with narrow, black band on anterior margin and narrow, black, transverse band on middle; style with lateral margins of distal shaft smooth *bicinctus* (DeLong)
- Pronotum with narrow, black band on anterior margin but without medial, black, transverse band; style with inner lateral margin of distal shaft toothed *claustrus* (DeLong)
- 11(8). Pygofer with caudoventral margin and pygofer spine smooth, without serrations or teeth 12
- Pygofer with caudoventral margin serrate or toothed, pygofer spine toothed basally *verecundus* (DeLong)
- 12(11). Pygofer with spine arising about middle of nearly truncate caudal margin; connective very long, extending beyond apex of style; aedeagus with bifurcated processes short, nearly reaching to midlength of shaft *titulus* (DeLong)
- Pygofer with spine arising from apex of distally produced caudoventral margin; connective short, extending nearly to apex of style; aedeagus with bifurcated processes long, extending beyond midlength of shaft *singularius*, n. sp.
- 13(1). Pronotum never with yellow, longitudinal band; claval veins not deeply marked with yellow, if yellow, very pale or ivory 14
- Pronotum with yellow, *longitudinal* band, claval veins deeply marked with yellow *trabilis*, n. sp.
- 14(13). Pygofer spine very long, exposed length more than 5 times exposed basal width 15
- Pygofer spine short, exposed length not more than 3 times exposed basal width 16
- 15(14). Crown with two handlebar-shaped markings on anterior margin; aedeagus with very long, reflexed, bifurcated processes in lateral view, processes parallel in dorsal view *clathrus* (DeLong)
- Crown with as many as 8 black spots on anterior margin, some spots sometimes connected, if so, never handlebar shaped; aedeagus with short bifurcated processes nearly reaching midlength of shaft in lateral view, processes crossing over in dorsal view *beameri* (Ball)
- 16(14). Pygofer with caudal margin smooth 17
- Pygofer with caudal margin serrate or toothed 18
- 17(16). Pygofer with very short spine arising from caudoventral margin; aedeagus with gonopore at about middle of shaft; connective long, reaching to about apex of style *albocinctus* (DeLong)
- Pygofer with moderately long spine arising from middle of caudal margin; aedeagus with gonopore basad of middle shaft; connective short, not reaching apex of style *tessellatus*, n. sp.
- 18(16). Pygofer with caudoventral margin produced distally, small, robust spine arising from caudodorsal angle, projecting dorsally; style with distal shaft long and narrow, serrate on inner lateral margin; aedeagus with gonopore at middle of shaft *anademus* (DeLong)
- Pygofer with obtusely angled caudal margin, very small spine arising from apex of angle and projecting distad; style with distal shaft robust and short, smooth on inner lateral margin; aedeagus with gonopore basad of middle of shaft *incidus* (DeLong)

Colladonus albocinctus (DeLong)

Figs. 1-5

Idiodonus albocinctus DeLong 1946:22 [Holotype ♀ (OSU) (examined).]

Colladonus albocinctus: Nielson 1957:51



Figs. 1–5. *Colladonus albocinctus* (DeLong): 1, male pygofer, lateral view; 2, connective and right style, dorsal view; 3, aedeagus, lateral view; 4, apex of right style, enlarged dorsal view; 5, apex of aedeagus and distal processes, enlarged dorsal view.

Idiodonus albocinctus: Metcalf 1967:1286

Idiodonus albocinctus: DeLong 1984:10

Idiodonus nigridentis DeLong 1946:29 [Holotype ♀ (OSU) (examined).] New synonymy

Colladonus nigridentis: Nielson 1957:51

Idiodonus nigridentis: Metcalf 1967:1301

Idiodonus nigridentis: DeLong 1984:10

Idiodonus sexpunctatus DeLong 1983:90 [Holotype ♀ (OSU) (examined).] New synonymy

Idiodonus sexpunctatus: DeLong 1984:10

LENGTH.—Male, 4.9–5.0 mm; female, 5.0–5.3 mm.

Color variable from absence to presence of narrow, ivory, transverse band about middle of pronotum, with two black spots on anterior margin of crown and absence or presence of

narrow, black, transverse band on disc of crown. Similar in general habitus to *verecundus* (DeLong) and in male genitalic characters to *fasciaticollis* (Stal).

Head with anterior margin produced, apex obtusely angulate.

MALE.—Pygofer in lateral view with very short, exposed caudoventral spine arising below middle of caudal margin, basal nine-tenths of spine sclerotized and fused to pygofer wall (Fig. 1); aedeagus in lateral view with bifurcated distal processes less than half as long as aedeagal shaft, not reaching gonopore (Fig. 3), crossing over in dorsal view (Fig. 5), gonopore at about midlength of shaft;

connective long, extending to about apex of style (Fig. 2); style with distal shaft broad, lateral margins smooth, stylar spine broad and bluntly pointed, projecting laterodistally (Fig. 4).

FEMALE.—Seventh sternum produced distally to form broad medial lobe, with median, shallow notch on its caudal margin, configuration of lobe variable, sometimes with small lobe at base of notch.

DISTRIBUTION.—This species has been collected in the Mexican states of Distrito Federal, Michoacán, Morelos, and Hidalgo.

HOST.—Some specimens were collected in pine forests at elevations of 7,500 feet from July to October (DeLong 1946).

REMARKS.—The configuration of the female seventh sterna of the holotypes of *nigridens* and *sexpunctatus* is similar, with some intra- and interpopulation variation in the angle of the posterolateral margins. The abdomen of the female holotype of *albocinctus* is missing, but comparisons were made with paratype female specimens after they were associated with holotype and with DeLong's illustration of the seventh sternum. Although the male genital structures of the allotypes of *albocinctus* and *nigridens* are nearly identical, the latter is more deeply sclerotized than the former. The sexes of both species appear to be properly associated.

The female holotype of *sexpunctatus* is identical in general habitus with the female holotype of *nigridens*, but both species differ markedly in color patterns from *albocinctus*. The latter species has a distinctive pronotal band that is absent in the specimens of the two former species. The male genital structures, however, are identical among these populations, which suggests that two infraspecific entities may be involved. Such action is deferred until more material is collected and studied.

Colladonus albocinctus is distinguished from *fasciaticollis* by the position of the pygofer spine, which is distinctly basad of the middle of the caudal margin of the pygofer.

Colladonus belli (Uhler)

Figs. 6–10

Jassus belli Uhler 1877:471 [Holotype ♀ (USNM) (examined).]

Thamnotettix belli: Van Duzee 1892:306

Colladonus belli: Ball 1936:58

Idiodonus belli: Medler 1943:18

Colladonus belli: Nielson 1957:38

Colladonus belli: Metcalf 1967:1245

Thamnotettix semipullatus Van Duzee 1892:306

Colladonus semipullatus: Oman 1949:125

Thamnotettix gilletti Van Duzee 1892:306

Colladonus gilletti: Oman 1949:125

Thamnotettix sonorae Gillette & Baker 1895:100

Colladonus sonorae: Oman 1949:125

LENGTH.—Male, 4.0–4.4 mm; female, 4.4–5.2 mm.

A well-marked species from pale yellow to deep yellow with two black spots on anterior margin of crown and sometimes with a black, transverse band on disc of crown; pronotum with pale yellow to deep yellow, transverse band; forewings with veins pale to yellow; color intensity highly variable. Similar to *fasciaticollis* in general habitus but with distinctive male genitalia.

Head with anterior margin not produced, apex rounded.

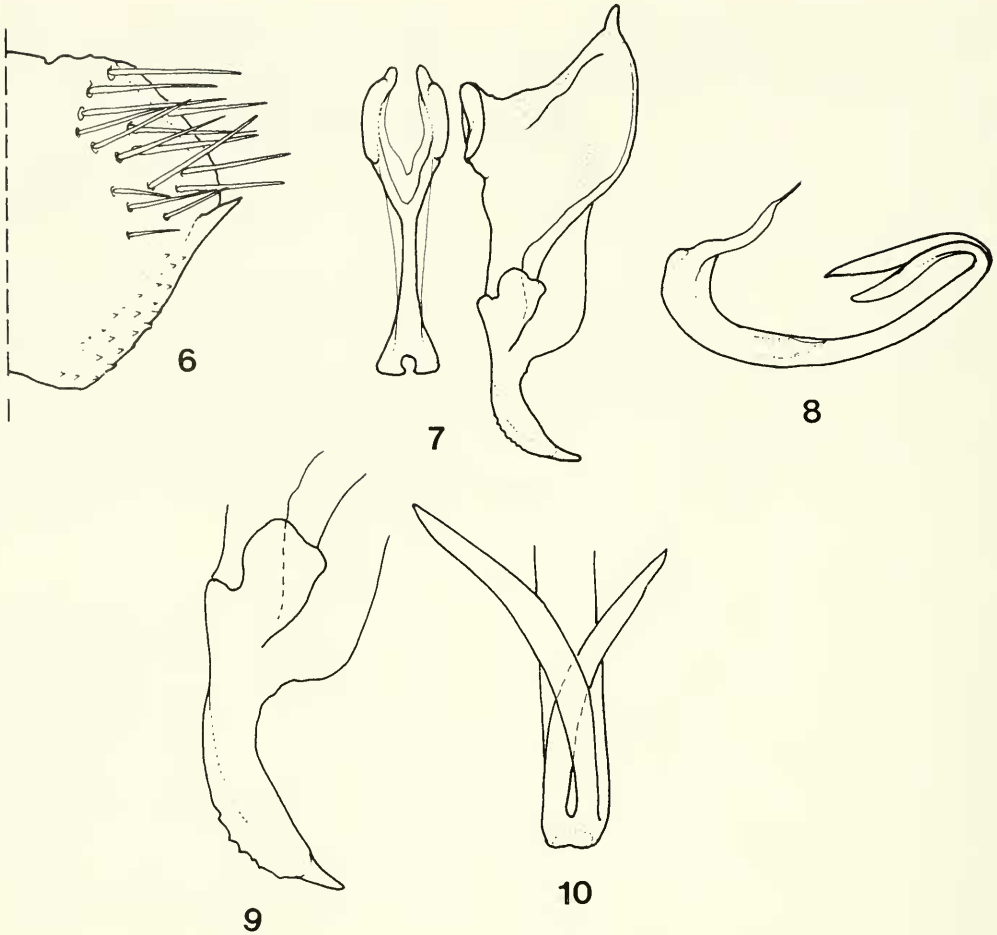
MALE.—Pygofer in lateral view with short, stout spine near or above middle of caudal margin, spine projecting dorsally (Fig. 6); aedeagus in lateral view with long, bifurcated distal processes extending beyond midlength of shaft (Fig. 8), crossing over in dorsal view (Fig. 10), gonopore about middle of shaft; connective short, not reaching apex of style (Fig. 7); style with moderately broad stylar shaft, inner lateral margin serrate, outer one smooth, stylar spine moderately long, projecting laterally (Fig. 9).

FEMALE.—Seventh sternum with truncate caudal margin, shallow, U-shaped excision medially.

DISTRIBUTION.—This species is widespread in mountainous areas from Mexico north to British Columbia. In Mexico the author collected specimens in the state of Chihuahua. It has been reported in seven western states in the United States and in the province of British Columbia (Nielson 1957).

HOST.—Adults have been swept from a variety of trees and shrubs by the author. Several specimens were taken from *Monarda* sp. near *citriodora* Cerv. in Chihuahua state in Mexico by the author.

REMARKS.—*Colladonus belli* may represent a species complex that occupies a rather narrow, longitudinal range in western North America. Specimens north of Utah and Colorado are almost uniformly yellow-green without a dark band across the crown, whereas southern populations are more



Figs. 6-10. *Colladonus belli* (Uhler): 6, male pygofer, lateral view; 7, connective and right style, dorsal view; 8, aedeagus, lateral view; 9, apex of right style, enlarged dorsal view; 10, apex of aedeagus and distal processes, dorsal view.

deeply marked with yellow and black markings. The position of the pygofer spine, although similar in configuration, varies from distad of the middle of the caudal margin in northern populations to the middle of the caudal margin in southern populations. No variation in the configuration of the female seventh sternum was evident, however.

Much additional collecting over the entire range of this species complex is needed. Populations are not commonly collected, and when found, specimens are usually few in number. A reexamination of the type specimens of *belli*, *semipullatus*, *gillettei*, and *sonorae* is recommended for any future study.

From *fasciaticollis*, to which it is similar, *belli* can be distinguished by the short pygofer species has been made, nor has any type of

dle to upper middle portion of the caudal margin.

Colladonus serratus, n. sp.

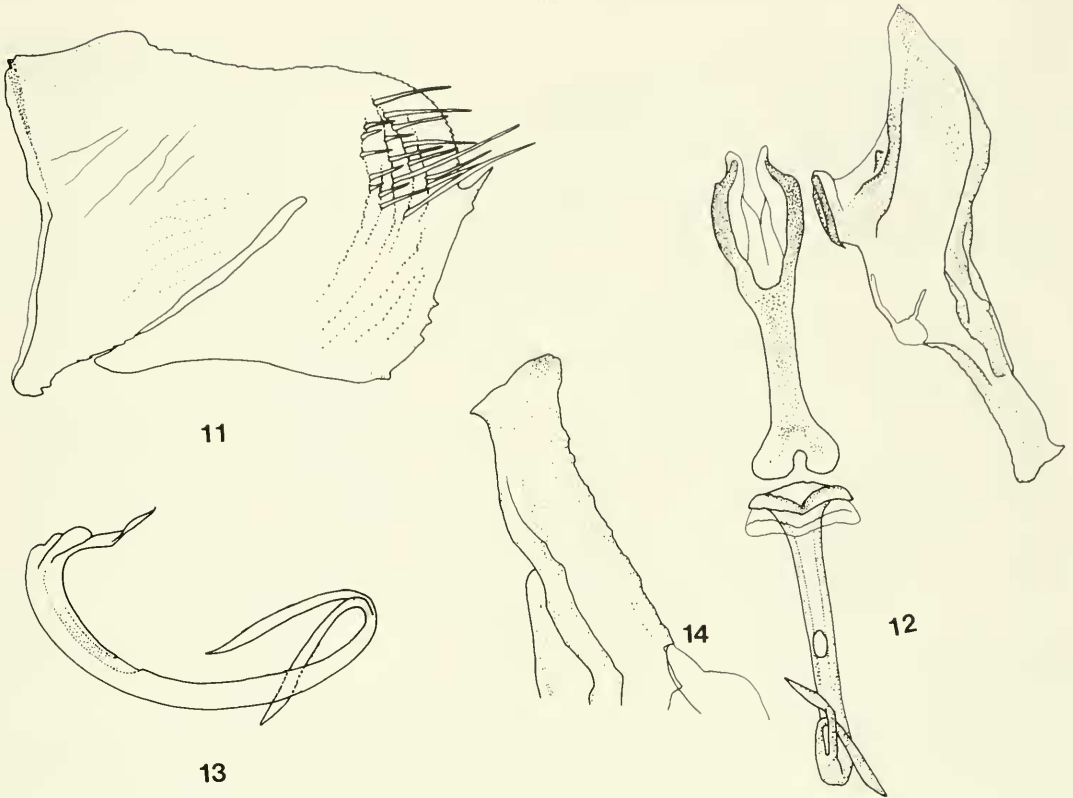
Figs. 11-14

LENGTH.—Male, 4.8–5.0 mm; female, 5.4 mm.

Color dark brown to blackish; crown yellow with two large, quadrate, black spots on anterior margin, disc with broad, black, transverse band; pronotum with yellow, narrow to broad, transverse band; forewings black except for transeulent area along middle of costa, veins yellow; face yellow with black markings.

Head with anterior margin produced, apex obtusely angled.

MALE.—Pygofer in lateral view with broadly rounded caudal margin, caudoventral



Figs. 11-14. *Colladonus serratus*, n. sp.: 11, male pygofer, lateral view; 12, connective, right style, and aedeagus, dorsal view; 13, aedeagus, lateral view; 14, apex of right style, enlarged dorsal view.

margin toothed or serrate, short spine above middle of caudal margin, directed dorsad (Fig. 11); aedeagus in lateral view narrow along major portion of shaft with moderately long, distal, bifurcated processes reaching to about middle of shaft (Fig. 13), processes broad medially, gradually tapered distally, crossing over in dorsal view (Fig. 12), gonopore basad of middle of shaft; connective short, not reaching apex of style (Fig. 12); style with broad styler shaft, styler spine sub-apical, small, sharply pointed (Fig. 14).

FEMALE.—Seventh sternum with truncate caudal margin, small tooth medially.

HOLOTYPE (male).—MEXICO: Mex., 7 miles east of Amecameca, 9,300 ft, 31.VI.1974, C. W. and L. O'Brien and Marshal (USNM). Allotype female, same locality as holotype, 10,000 ft, 17.VIII.1982, C. W. and L. O'Brien and G. Wibner (USNM). Paratypes: one male, same data as female allotype (in author's collection); one male, Mexico, #16, 7 miles southeast of Amecameca, 9,000 ft, 17.VIII.1969, George W. Byers (UK).

REMARKS.—This is a rather unique species that is not related to other species of *Colla-*

donus in Mexico. The combination of the sub-apical styler spine and toothed caudoventral margin of the pygofer will readily distinguish it from all other known species in the region.

Colladonus fasciaticollis (Stal)

Figs. 15-22

Jassus fasciaticollis Stal 1864:86 [Holotype ♀ (NM) (examined).]

Thamnotettix fasciaticollis: DeLong 1946:13

Colladonus fasciaticollis: Nielson 1957:37

Thamnotettix fasciaticollis: Metcalf 1967:756

Idiodonus tubulus DeLong 1946:22 [Holotype ♀ (OSU) (examined).]

Colladonus tubulus: Nielson 1957:37

Idiodonus tubulus: Metcalf 1967:1303

Idiodonus tubulus: DeLong 1984:10

Idiodonus diserus DeLong 1946:24 [Holotype ♀ (OSU) (examined).]

Colladonus diserus: Nielson 1957:37

Idiodonus diserus: Metcalf 1967:1297

Idiodonus diserus: DeLong 1984:11

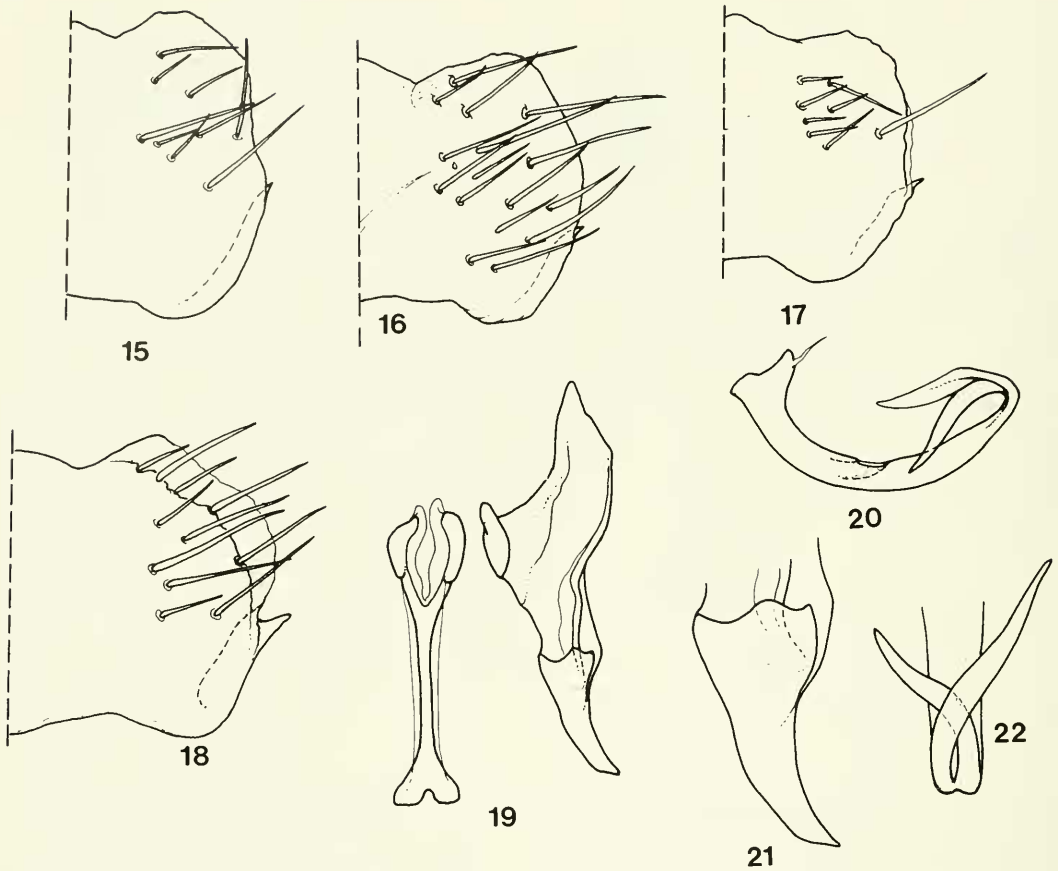
Idiodonus pravus DeLong 1946:24 [Holotype ♀ (OSU) (examined).] New synonymy

Idiodonus pravus: Metcalf 1967:1301

Idiodonus pravus: DeLong 1984:11

Idiodonus dampfi DeLong 1946:20 [In part, allotype ♂ and 8 paratypes (OSU)]

Idiodonus dampfi: Linnavuori 1959:280 [Misdetermined specimens.]



Figs. 15–22. *Colladonus fasciaticollis* (Stal): 15, male pygofer of specimen from Costa Rica, lateral view; 16, male pygofer of allotype of *tubulus*, lateral view; 17, male pygofer of allotype of *diserius*, lateral view; 18, male pygofer of allotype of *dampfi* (= *fasciaticollis*), lateral view; 19, connective and right style, dorsal view; 20, aedeagus, lateral view; 21, apex of right style, enlarged dorsal view; 22, apex of aedeagus and distal processes, enlarged dorsal view.

LENGTH.—Male, 4.4–4.6 mm; female, 4.8–5.0 mm.

A well-marked black and yellow species usually, but sometimes paler in some specimens. Similar in general habitus to *belli* and to *albocinctus* in male genitalic characters but distinct from both species.

Head with anterior margin not produced, apex nearly rounded.

MALE.—Pygofer in lateral view with short, bluntly pointed spine arising below middle of caudal margin (some variation in origin of spine on caudoventral margin), basal 3/4 of spine sclerotized and fused to pygofer wall (Figs. 15, 16, 17, 18); aedeagus in lateral view with moderately long and narrow (sometimes broad), distal, bifurcated processes extending to about middle of shaft (Fig. 20), crossing over in dorsal view (Fig. 22), gonopore at

about middle of shaft; connective short, apex not reaching to apex of style (Fig. 19); style with tapered styler shaft, lateral margins smooth, styler spine slanted laterodistally (Fig. 22).

FEMALE.—Seventh sternum with caudal margin obtusely angled with shallow, U-shaped, median emargination.

DISTRIBUTION.—*Colladonus fasciaticollis* is widely distributed from southern California to Costa Rica. Its northern range into the United States is restricted to the southern border of California. It is common in southern Mexico in the states of Distrito Federal, Veracruz, Michoacán, and Puebla.

HOST.—This species presumably occurs on unspecified trees or shrubs in Mexico from September to November at elevations from

5,000 to 10,000 feet (DeLong 1946). In Costa Rica it was taken on *Lippia berlandieri* in February (Nielson 1957).

REMARKS.—In my earlier work (Nielson 1957), *tubulus* and *diserus* were transferred to *Colladonus* and suppressed as synonyms of *fasciaticollis*. Reexamination of the female holotypes and comparison of them with authentically determined female specimens of *fasciaticollis* confirm that action.

The female holotype of *pravus* is identical to its counterpart holotype specimens of the above species. The male allotype of *dampfi* from Bella Vista, Mexico (MB 366), which apparently had been misidentified and improperly associated with the female holotype, was associated with the male holotype of *pravus* from Zitacuaro, Michoacán. Two of five male paratype specimens and three female paratype specimens of *dampfi* from Orizaba, Veracruz, were also associated with *pravus*.

From *albicinctus* and *belli*, to which it has similar genitalia, *fasciaticollis* can be distinguished by the pygofer spine that arises from near the middle of the caudal margin, the shorter aedeagus, and the stouter, bifurcated distal processes.

Colladonus ultimus, n. sp.

Figs. 23–26

LENGTH.—Male, 3.9–4.2 mm; female, 4.7–4.9 mm.

General color dark brown to black; crown yellow with two black spots on anterior margin and narrow, black, transverse band between eyes; pronotum black with narrow, yellow, transverse band at middle; forewings black with yellow veins, costal area hyaline; face yellow with black markings. Similar in general habitus to *dampfi* (DeLong) but with distinctive male genitalia.

Head with anterior margin produced, apex rounded.

MALE.—Pygofer in lateral view with caudal margin broadly rounded, pygofer spine short, slightly longer than basal width, arising just below midline of pygofer and projecting caudodorsally (Fig. 23); aedeagus in lateral view with narrow shaft, distal, bifurcated processes long, more than 1/2 length of shaft and extending beyond gonopore (Fig. 25), processes of uniform width except for tapered apex, gonopore at about midlength of shaft; connec-

tive short, apex not reaching apex of style (Fig. 24); style with broad stylar shaft, nearly straight, stylar spine short, sharply pointed distally and projecting laterally (Fig. 26).

FEMALE.—Seventh sternum with caudal margin nearly truncate, with small indentation medially.

HOLOTYPE (male).—PANAMA: Chiriqui, Bambito, 1,400 m, 10.VI.1976, Wolda and Estribi (USNM).

REMARKS.—Numerous specimens of this species that were collected in Costa Rica and preserved in alcohol were too badly distorted and discolored to be used in the type series. They were all taken at Cerro de la Muerte, 10,000 ft, I.VIII.1966, S. L. Wood, and are in the M. L. Bean Museum collection. A single female specimen of this species from Yepocapa, Guatemala, XII.1948, H. T. Dalmat, was also examined.

This species thus far represents the southernmost extremity of the range of *Colladonus*. It can be distinguished from *dampfi* by the shorter pygofer spine, by the gonopore, which lies midlength of the aedeagal shaft, and by the shorter connective.

Colladonus tolucensis, n. sp.

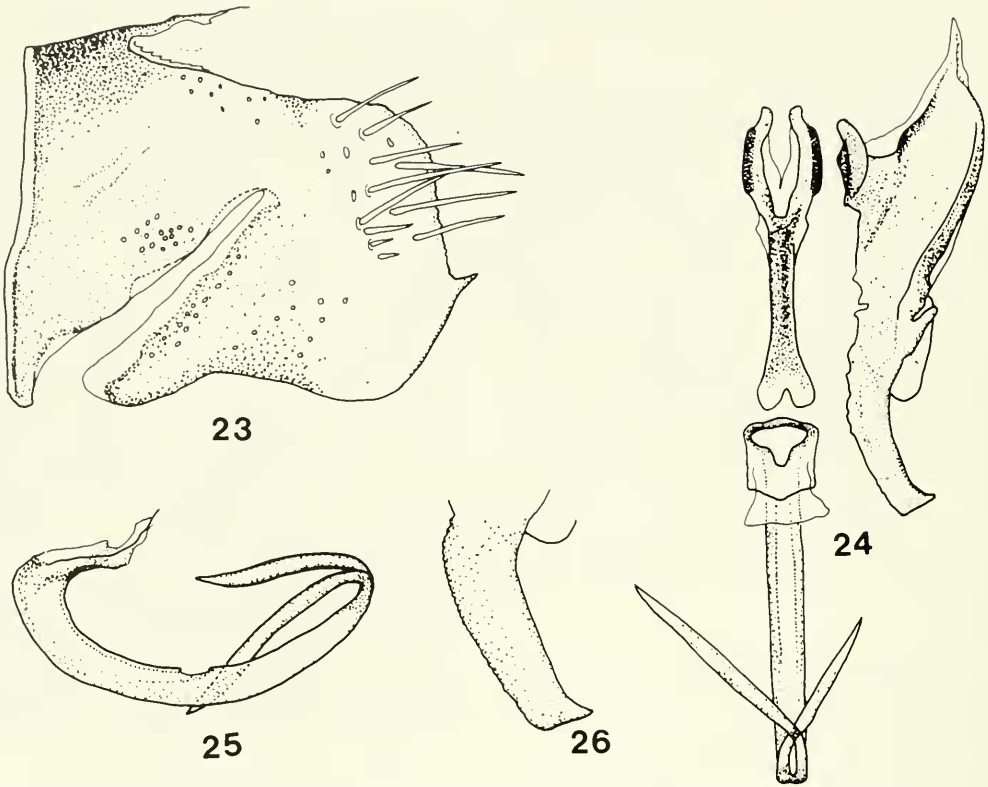
Figs. 27–30

LENGTH.—Male, 4.5–4.6 mm; female, 5.0–5.2 mm.

Color tan with black markings; crown with two spots on anterior margin, black, transverse band on middle of crown; pronotum with broad, pale ivory, transverse band, sometimes with broken black stripe on either side of middle; forewings with pale veins, clavus sometimes dark brown, and with dark brown, longitudinal stripe above costal cell; face deep tan with black markings on clypeus. Similar in general habitus to several species possessing broad pronotal band and in male genital characters to *ultimus*.

Head with anterior margin produced, apex obtusely angled.

MALE.—Pygofer in lateral view with broad, obtusely rounded caudal margin, very short spine arising from middle of margin and sometimes hidden from lateral view, projecting distally (Fig. 27); aedeagus in lateral view with narrow shaft, distal, bifurcated processes long, extending slightly beyond midlength of shaft (Fig. 29), processes broad medially, pointed distally, gonopore at about midlength



Figs. 23–26. *Colladonus ultimus*, n. sp.: 23, male pygofer, lateral view; 24, connective, right style, and aedeagus, dorsal view; 25, aedeagus, lateral view; 26, apex of right style, enlarged dorsal view.

of shaft; connective short, not reaching apex of style (Fig. 28); style with tapered styler shaft, styler spine small, directed laterodistally (Fig. 30).

FEMALE.—Seventh sternum with caudal margin nearly truncate, with broad median excavation.

HOLOTYPE (male).—MEXICO: Distrito Federal, Toluca road, 26.IX.1945, DeLong, Hershberger, and Elliot (OSU), allotype female, Mexico City, D.F., 13.IX.1939, D. M. DeLong (OSU). Paratypes: one male, same data as holotype (in author's collection); one female, same data as allotype (in author's collection); 29 females, same data as allotype (OSU).

REMARKS.—From *ultimus*, to which it is similar, *tolucensis* can be distinguished by the unexposed pygofer spine, by the tapered styler shaft, and by the color patterns on the pronotum.

Colladonus dampfi (DeLong)

Figs. 31–34

Idiodonus dampfi DeLong 1946:20 [Holotype ♀ (OSU) (examined).]

Colladonus dampfi: Nielson 1957:51

Idiodonus dampfi: Metcalf 1967:1297

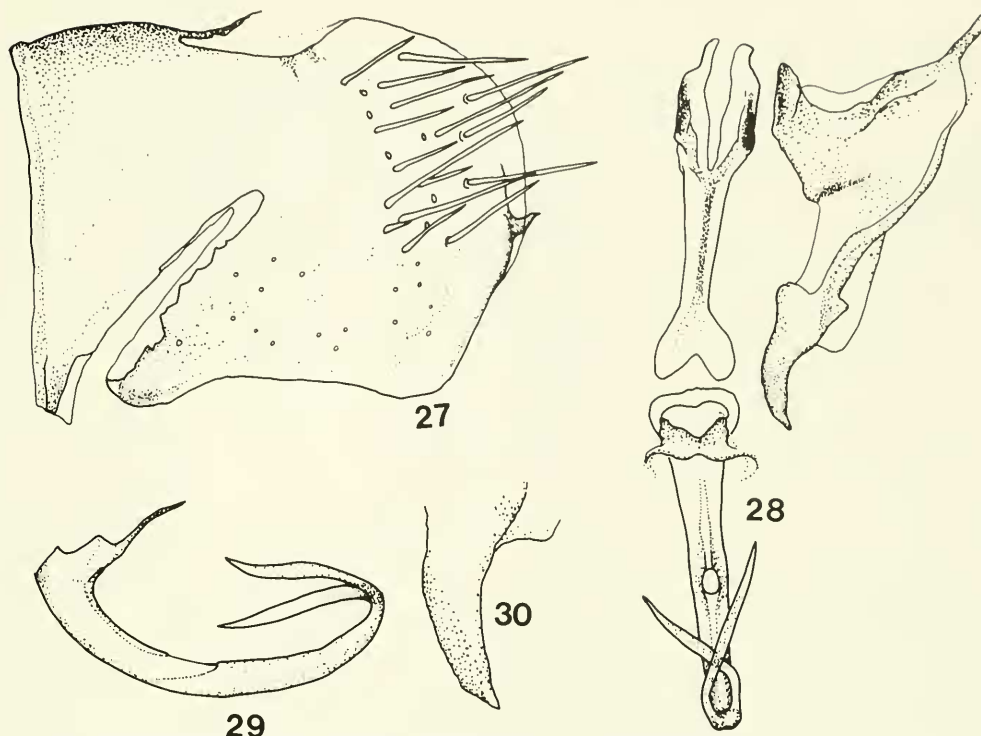
Idiodonus dampfi: DeLong 1984:11

LENGTH.—Male, 3.9–4.0 mm; female, 4.5 mm.

A well-marked, black and yellow species with two distinct, black spots on anterior margin of crown, narrow, transverse, black band on disc; pronotum with broad, black band along anterior margin, broad, yellow, transverse band medially, narrow, black band on posterior margin; forewings with pale yellow to deep yellow veins, cells brown to black. Similar to other pronotal banded species and to *bicinctus* (DeLong) in male genital characters.

Head with anterior margin not produced, apex obtusely rounded.

MALE.—Pygofer in lateral view with moderately long, narrow spine arising from middle of caudal margin and projecting dorsally



Figs. 27–30. *Colladonus tolucensis*, n. sp.: 27, male pygofer, lateral view; 28, connective, right style, and aedeagus, dorsal view; 29, aedeagus, lateral view; 30, apex of right style, enlarged dorsal view.

(Fig. 31); aedeagus with distal, bifurcated processes long, extending beyond midlength of shaft (Fig. 33), crossing over in dorsal view, gonopore basad of middle of shaft; connective long, extending to about apex of style (Fig. 32); style with narrow styler shaft, inner lateral margin roughly dentate, styler spine long and projecting laterally (Fig. 34).

FEMALE.—Seventh sternum with caudal margin narrowed distally, shallow, U-shaped indentation medially.

DISTRIBUTION.—*Colladonus dampfi* is known only from the Mexican states of Veracruz and Morelos.

HOST.—Recorded from unspecified trees and shrubs from 3,000 to 9,000 feet during September to November (DeLong 1946).

REMARKS.—The type series of *dampfi* is mixed. The female holotype and male allotype were not properly associated; the latter is identical to *pravus*, which is treated as a junior synonym of *fasciaticollis* in this paper. A male paratype of *dampfi* from Cordoba, Veracruz (type locality), was associated with the female holotype of *dampfi* and used in illus-

trating the male genitalia. Five additional male paratypes, three from Cuernavaca, Morelos, and two from unspecified localities (MB 95, Mexico, and MF 8523, Mexico) were identical to the male paratype specimen associated with the female holotype. The remaining specimens in the type series are discussed under *fasciaticollis*.

Colladonus dampfi can be distinguished from *bicinctus* by the short and more rounded anterior margin of the head, by the longer pygofer spine, and by the longer, distal, bifurcated aedeagal processes.

Colladonus bicinctus (DeLong)

Figs. 35–39

Idiodonus bicinctus DeLong 1946:18 [Holotype ♀ (OSU) (examined).]

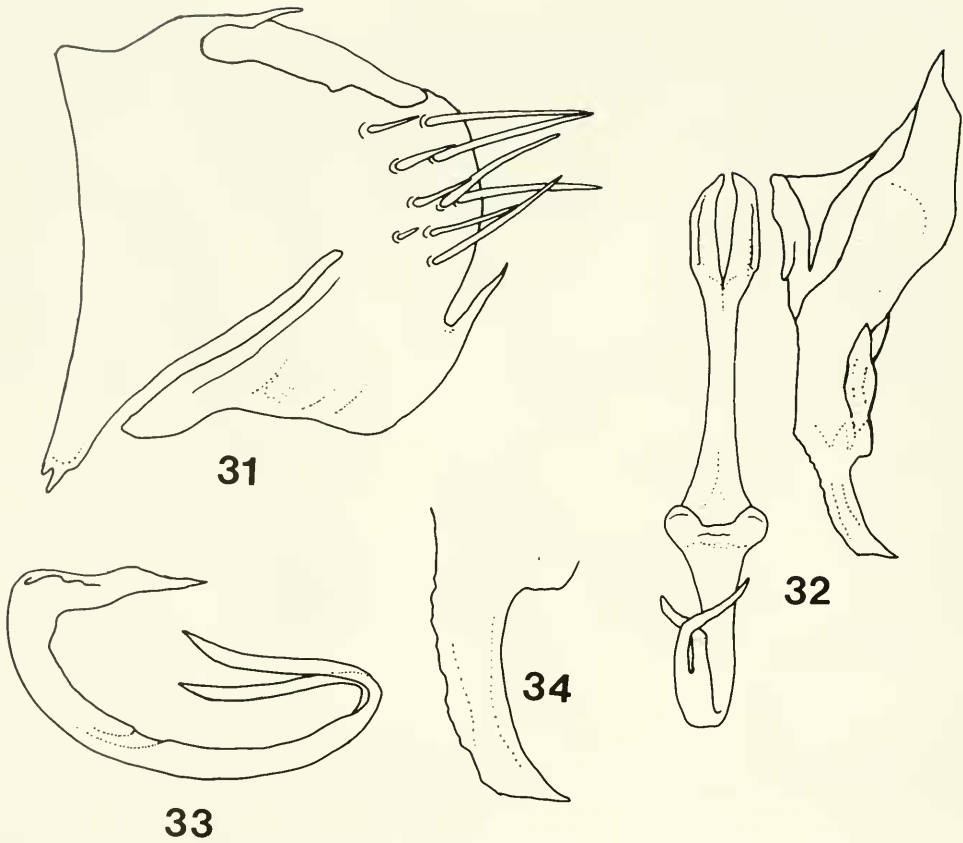
Colladonus bicinctus: Nielson 1957:51

Idiodonus bicinctus: Metcalf 1967:1287

Idiodonus bicinctus: DeLong 1984:10

LENGTH.—Male, 4.2 mm; female, 4.5–4.8 mm.

A well-marked species of deep yellow with black markings; crown with two triangular,



Figs. 31–34. *Colladonus dampfi* (DeLong): 31, male pygofer, lateral view; 32, connective, right style, and aedeagus, dorsal view; 33, aedeagus, lateral view; 34, apex of right style, enlarged dorsal view.

black spots on anterior margin and narrow, black, transverse band on middle of disc; pronotum with narrow, black band along anterior margin and narrow, black, transverse band on middle transecting broad, yellow, transverse band; forewings with veins yellow, cells black. Similar in general habitus and male genitalic characters to *claustrus* (DeLong).

Head with anterior margin produced, apex angled.

MALE.—Pygofer in lateral view with moderately long spine on middle of caudal margin, spine directed caudodorsally (Fig. 35); aedeagus in lateral view with stout, distal, bifurcated processes reaching to about midlength of shaft (Fig. 37), not crossing over in dorsal view (Fig. 39), gonopore slightly basad of midlength of shaft; connective short, not reaching apex of style (Fig. 36); style with narrow stylar shaft, lateral margins smooth, stylar spine very short and bluntly pointed (Fig. 38).

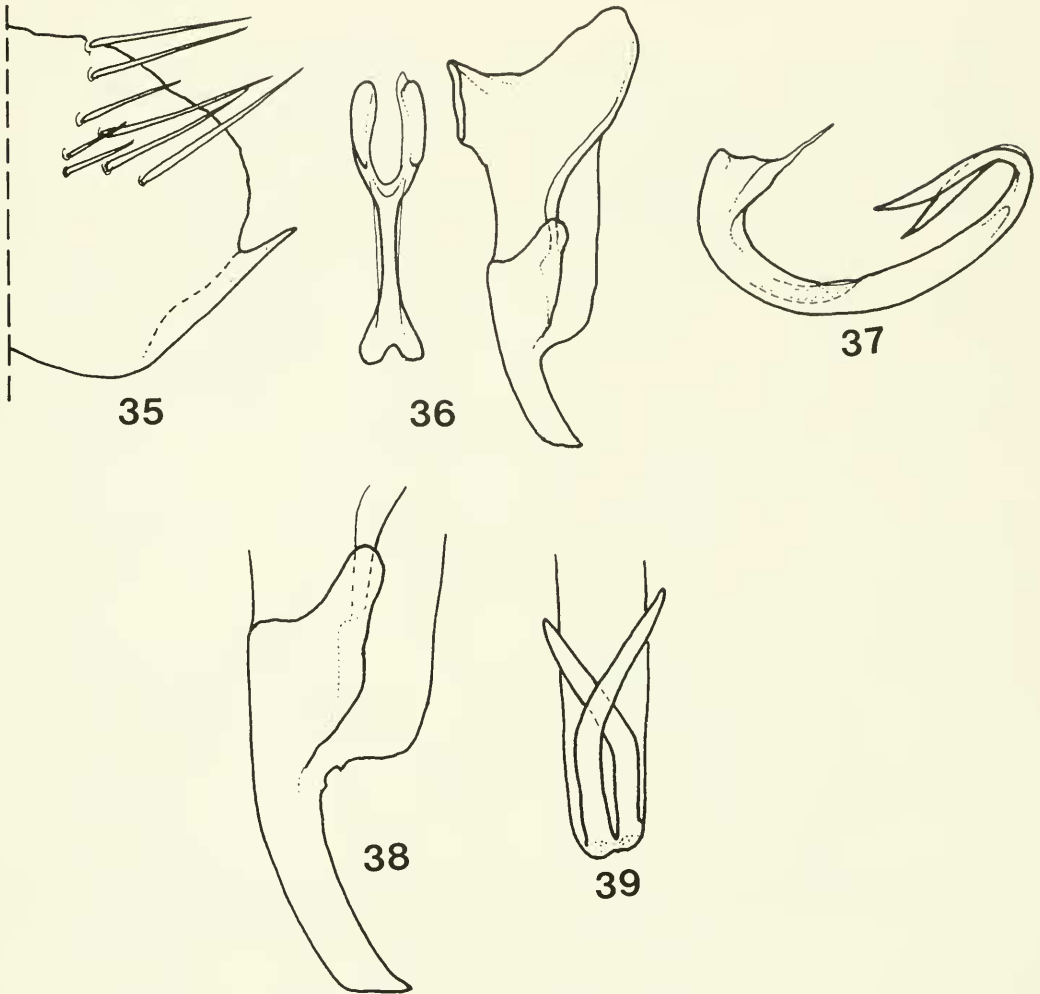
FEMALE.—Seventh sternum with caudal margin shallowly and broadly concave, small indentation medially.

DISTRIBUTION.—This species is known only from the Mexican state of Distrito Federal.

HOST.—According to DeLong (1946) the species was collected at 7,500 feet from unspecified shrubs or trees during a June–September period.

REMARKS.—This species was described from the female holotype and a female paratype specimen. However, a male paratype specimen (MB 352, Mexico, A. Dampf, coll.), which was without a name label and not cited in the original description, was found among the type series. The specimen was associated with the female holotype and used in illustrating the genitalia.

The species can be separated from *claustrus* by the presence of a narrow, transverse, black band on the middle of the pronotum, by the narrower pygofer spine, by the shorter



Figs. 35–39. *Colladonus bicinctus* (DeLong): 35, male pygofer, lateral view; 36, connective and right style, dorsal view; 37, aedeagus, lateral view; 38, apex of right style, enlarged dorsal view; 39, apex of aedeagus and distal processes, enlarged dorsal view.

connective, and by the smooth-margined sty-
lar shaft.

Colladonus claustrus (DeLong)

Figs. 40–44

Idiodonus claustrus DeLong 1946:18 [Holotype ♀ (OSU)
(examined).]

Colladonus claustrus: Nielson 1957:51

Idiodonus claustrus: Metcalf 1967:1289

Idiodonus claustrus: DeLong 1984:11

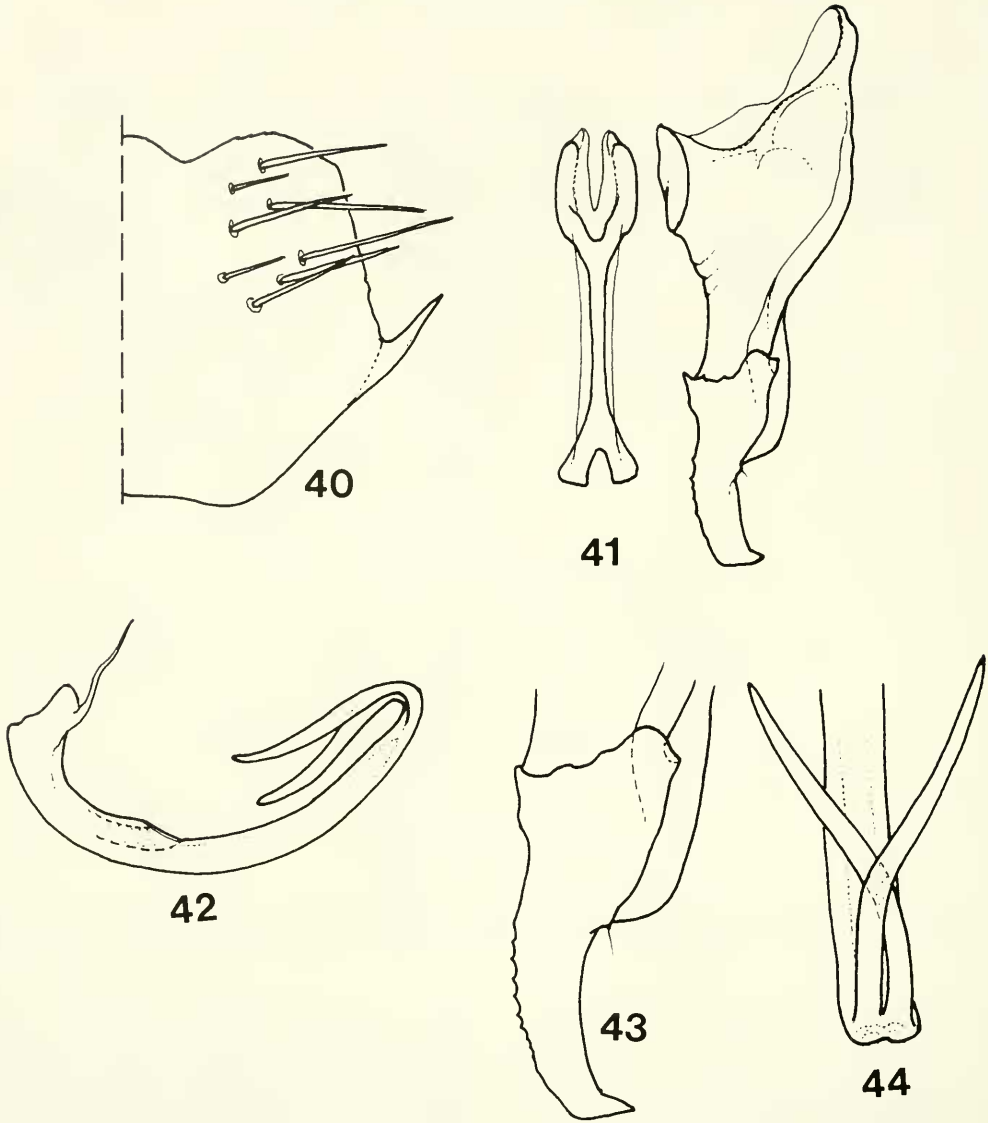
LENGTH.—Male, 4.4 mm; female, 4.8–5.0 mm.

A well-marked species with color patterns nearly identical to *bicinctus* except paler and without median, transverse, black band on pronotum. Similar in male genital characters to *bicinctus*.

Head with anterior margin produced, apex angled.

MALE.—Pygofer in lateral aspect with moderately long, stout spine on middle of caudal margin, spine directed caudodorsally (Fig. 40); aedeagus with slender, bifurcated, distal processes reaching to about middle of shaft, apices not reaching gonopore (Fig. 42), crossing over in dorsal view (Fig. 44), gonopore basad of midlength of shaft; connective short, not reaching apex of style (Fig. 41); style with inner lateral margin serrate, outer one smooth, styler spine short, bluntly pointed and directed laterad (Fig. 43).

FEMALE.—Seventh sternum with caudal margin shallowly and broadly concave, small



Figs. 40-44. *Colladonus claustrus* (DeLong): 40, male pygofer, lateral view; 41, connective and right style, dorsal view; 42, aedeagus, lateral view; 43, apex of right style, enlarged dorsal view; 44, apex of aedeagus and distal processes, enlarged dorsal view.

indentation medially.

DISTRIBUTION.—This species is known only from the Mexican states of Veracruz and Chiapas.

HOST.—Specimens were collected on unspecified shrubs or trees at elevations between 4,000 and 7,000 feet from August to October (DeLong 1946).

REMARKS.—The female holotype and male allotype, although from widely separate localities, appear to be properly associated. From *bicinctus*, to which it is closely related, *claus-*

trus can be separated by the absence of the narrow, transverse, black band on the middle of the pronotum, by the stouter pygofer spine, by the serrated, inner lateral margin of the stylar shaft, and by the more basad position of the gonopore.

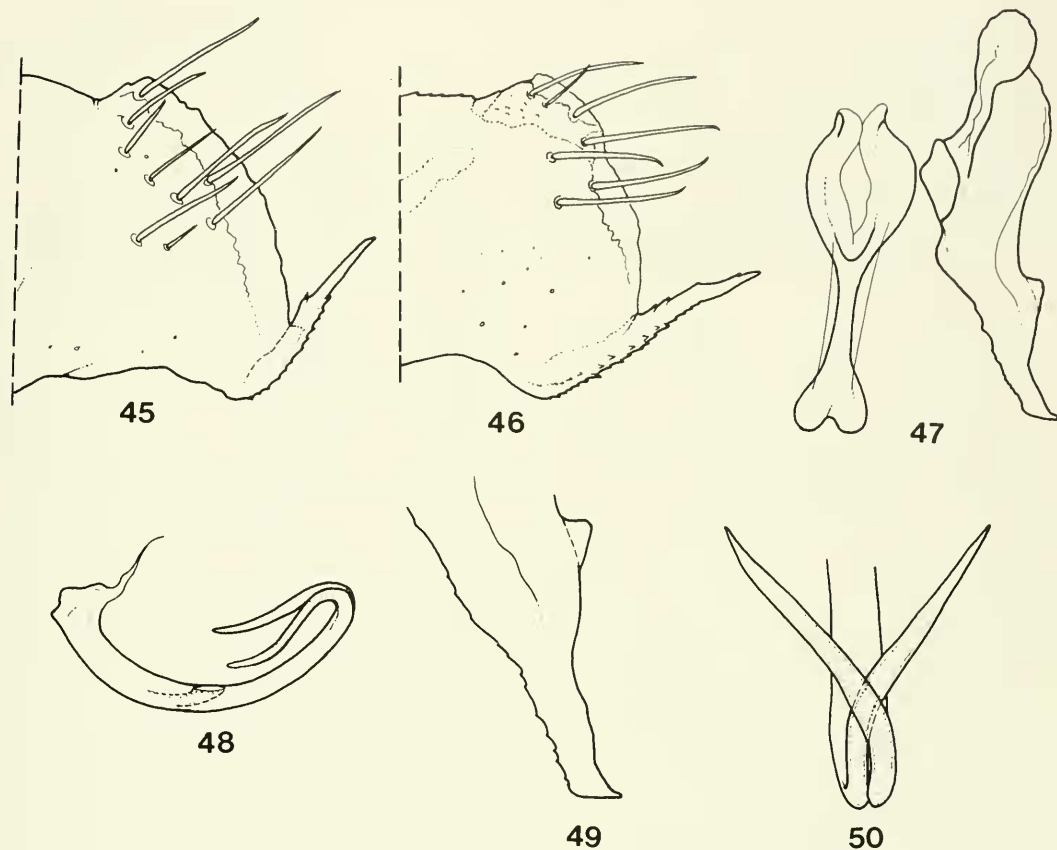
Colladonus verecundus (DeLong)

Figs. 45-50

Idiodonus verecundus DeLong 1946:20 [Holotype ♀ (OSU) (examined).]

Colladonus verecundus: Nielson 1957:51

Idiodonus verecundus: Metcalf 1967:1304



Figs. 45–50. *Colladonus verecundus* (DeLong): 45, male pygofer (allotype of *verecundus*), lateral view; 46, male pygofer (allotype of *acus*), lateral view; 47, connective and right style, dorsal view; 48, aedeagus, lateral view; 49, apex of right style, enlarged dorsal view; 50, apex of aedeagus and distal processes, enlarged dorsal view.

Idiodonus verecundus: DeLong 1984:11

Idiodonus acus DeLong 1946:20 [Holotype ♀ (OSU) (examined).] New synonymy

Colladonus acus: Nielson 1957:51

Idiodonus acus: Metcalf 1967:1286

Idiodonus acus: DeLong 1984:11

Idiodonus mexicanus: DeLong 1946:27 [Holotype ♀ (OSU) (examined).] New synonymy

Idiodonus mexicanus: Metcalf 1967:1300

Idiodonus mexicanus: DeLong 1984:11

LENGTH.—Male, 4.5–4.6 mm; female, 4.9–5.0 mm.

A well-marked species with two distinctive, black spots on anterior margin of crown and narrow to broad, ivory or yellow, transverse band along middle of pronotum. Similar to other pronotal banded species, but with unique pygofer spine.

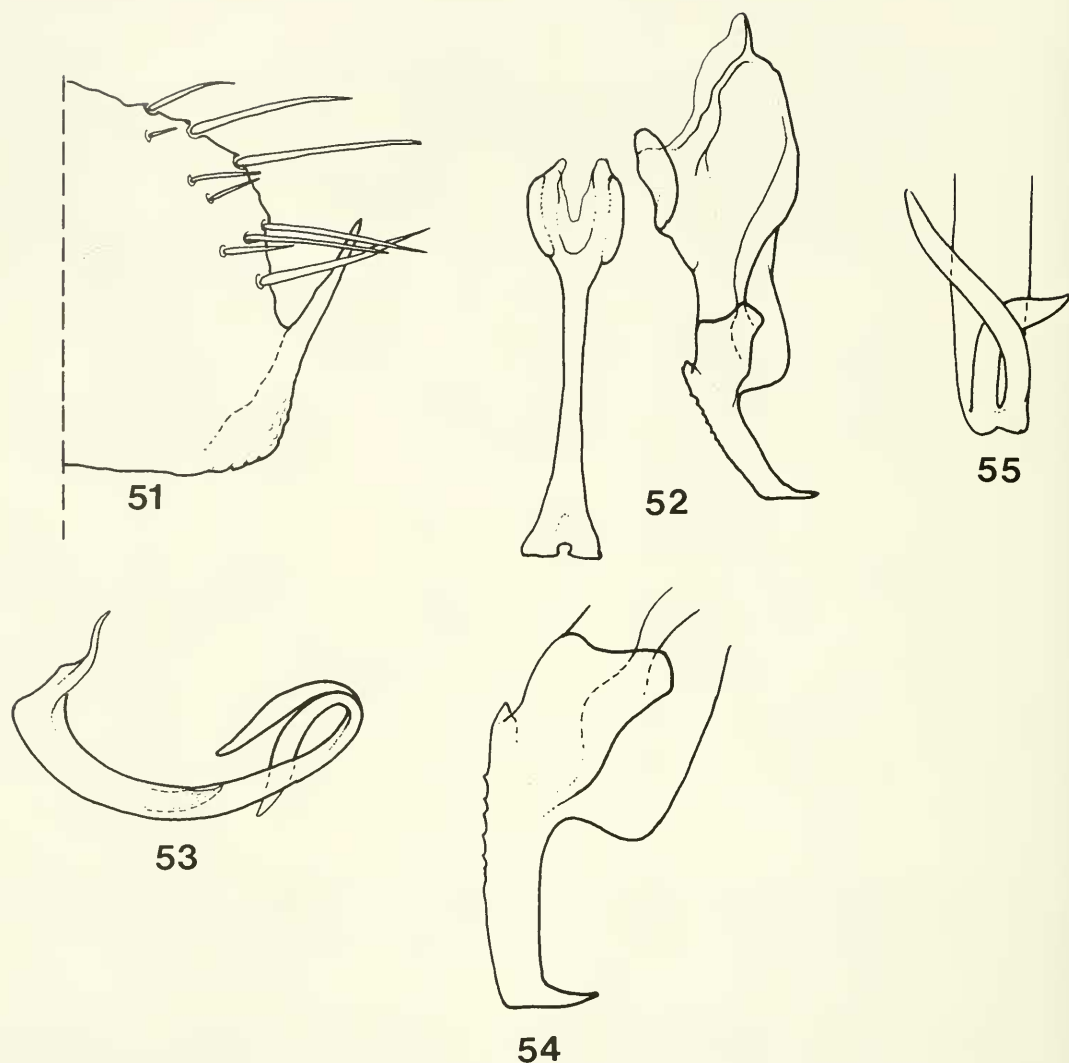
Head with anterior margin produced, apex angled.

MALE.—Pygofer in lateral view with long,

dentate caudoventral spine, spine projecting caudodorsally with its exposed distal part about 1/2 as long as its entire length from its basal origin (Figs. 45, 46); aedeagus in lateral view with bifurcated distal processes about 1/2 as long as shaft, apices reaching gonopore (Fig. 48), crossing over in dorsal view (Fig. 50), gonopore at midlength of shaft; connective long, extending distally beyond apex of style (Fig. 47); style with stylar shaft serrate on inner lateral margin with short stylar spine projecting laterally (Fig. 49).

FEMALE.—Seventh sternum with caudal margin slightly rounded or angled on either side of median, shallow indentation; sometimes with slight protrusion laterally next to indentation.

DISTRIBUTION.—This species is restricted to the Mexican states of Distrito Federal, Michoacán, and Morelos.



Figs. 51-55. *Colladonus titulus* (DeLong): 51, male pygofer, lateral view; 52, connective and right style, dorsal view; 53, aedeagus, lateral view; 54, apex of right style, enlarged dorsal view; 55, apex of aedeagus and distal processes, enlarged dorsal view.

HOST.—Specimens were collected on pine at elevations from 9,500 to 10,300 feet during September and October (DeLong 1946).

REMARKS.—The female seventh sterna of the holotypes of *verecundus* and *mexicanus* are identical in configuration. In *acus* the lateral margins are angled toward the middle. I consider these traits normal variation in the population. The sexes of each species of *verecundus* and *acus* appear to be properly associated, although there is some variation in color between the two species. The color patterns and configuration of the seventh sternum of the holotype of *mexicanus* are similar to *ver-*

cundus. The male genitalic features of the allotypes of *acus* and *verecundus* are identical.

This species can be distinguished from all members of the genus *Colladonus* by its unique, very long, dentate pygofer spine.

Colladonus titulus (DeLong)

Figs. 51-55

Idiodonus titulus DeLong 1946:24 [Holotype ♂ (OSU) (examined).]

Colladonus titulus: Nielson 1957:51

Idiodonus titulus: Metcalf 1967:1302

Idiodonus titulus: DeLong 1984:11

Idiodonus goodi: DeLong 1946:27 [Holotype ♀ (OSU)]

(examined).] New synonymy
Idiodonus goodi: Metcalf 1967:1298
Idiodonus goodi: DeLong 1984:11

LENGTH.—Male, 4.4–4.6 mm; female, 4.9–5.2 mm.

General color light tannish to yellow with deep fuscous to black markings on crown, pronotum, and forewings; crown with two subtriangular spots on anterior margin; pronotum with anterior border black, broad, transverse, tannish band below; forewings with veins tannish to yellow, cells suffused with light fuscous to black. Similar in general habitus and certain male genital characters to *claustrus*, but more nearly related in male genital characters to *singularius*.

Head with anterior margin not produced, apex slightly angled.

MALE.—Pygofer in lateral view with long spine arising about middle of caudal margin and directed nearly dorsad (Fig. 51); aedeagus in lateral view with short, rather stout, distal, bifurcated processes not reaching midlength of shaft (Fig. 53), crossing over in dorsal view (Fig. 55), gonopore slightly distad of middle of shaft; connective long, extending distad of apex of style (Fig. 52); style with narrow stylar shaft, stylar spine long, narrow, directed laterad (Fig. 54).

FEMALE.—Seventh sternum with caudal margin slightly produced along middle, with small excision at middle.

DISTRIBUTION.—This species is known only from the Mexican states of Distrito Federal and Veracruz.

HOST.—Reported from unspecified trees or shrubs above 7,500 feet during September and October by DeLong (1946).

REMARKS.—The male holotype and female allotype of *titulus* appear to be correctly associated. The general habitus and female seventh sternum of the holotype of *goodi* are identical to the female allotype of *titulus*. Males of *goodi* are unknown.

Colladonus titulus can be separated from *claustrus* by the much longer pygofer spine and from *singularius* by the shorter aedeagal processes, the more distal position of the gonopore, and the shorter stylar spine.

Colladonus singularius, n. sp.
 Figs. 56–59

LENGTH.—Male, 4.6 mm; female, 5.0–5.2 mm.

Color tan to pale yellow with two small spots on anterior margin of crown, narrow, dark, transverse band on middle of crown in male, marking incomplete in female; pronotum with broad, ivory, transverse band; forewings with veins pale yellow, cells translucent; face yellow with dark markings on clypeus. Similar to *belli* in general habitus but with distinctive male genitalia.

Head with anterior margin not produced, apex rounded.

MALE.—Pygofer in lateral view with produced caudoventral margin, pygofer spine very long, arising from apex of caudoventral margin and projecting caudodorsally (Fig. 56); aedeagus in lateral view with narrow shaft and long, distal, bifurcated processes extending beyond midlength of shaft (Fig. 58), crossing over in dorsal view (Fig. 57), gonopore basad of middle of shaft; connective moderately long, nearly reaching to apex of style (Fig. 57); style with narrow stylar shaft, curved laterally and with short, bluntly pointed stylar spine (Fig. 59).

FEMALE.—Seventh sternum with truncate caudal margin with small, narrow, median excision.

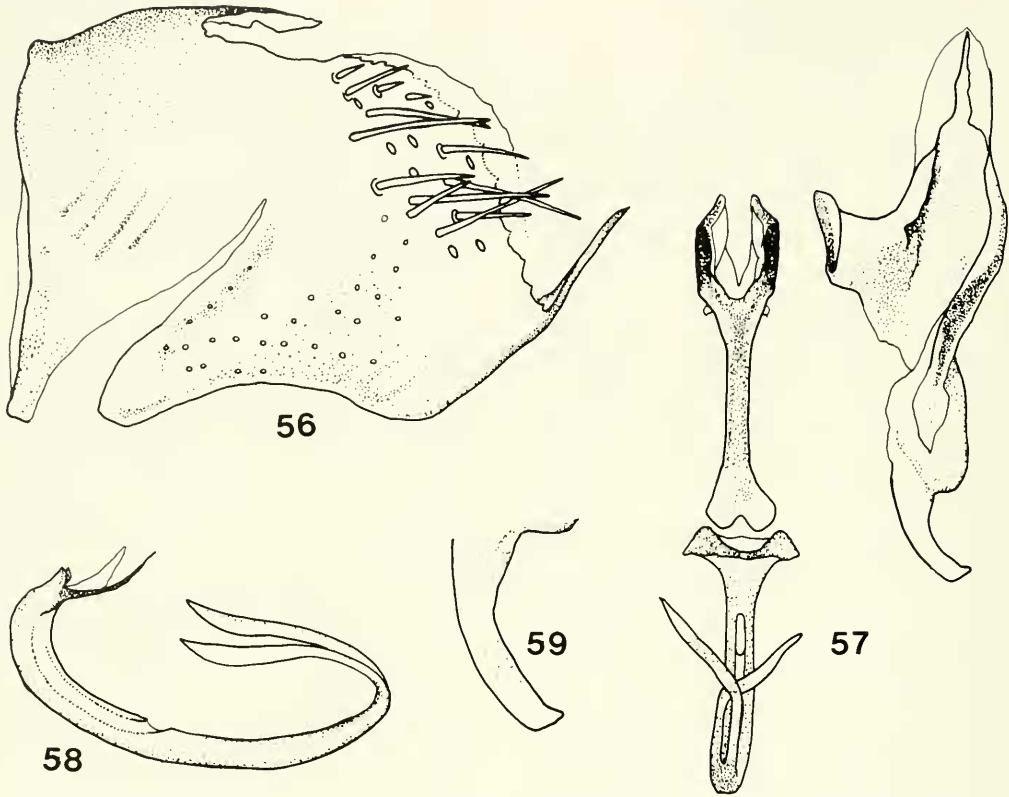
HOLOTYPE (male).—MEXICO: Guanajuato, 10 mi south San Luis de la Paz 24.X. 1981, M. W. Nielson (Nielson collection), female allotype, same data as holotype (Nielson collection). Paratype: seven females, same data as holotype (BYU, Nielson collection).

REMARKS.—From *belli*, to which it is similar in general habitus, *singularius* can be separated by the very long pygofer spine and the longer, aedeagal, bifurcated processes.

Colladonus trabilis, n. sp.
 Figs. 60–63

LENGTH.—Male, 4.8 mm.

COLOR.—Yellow and black. Crown yellow with two black spots on anterior margin, broad, black marking on either side of middle on disc; pronotum black with broad, yellow, longitudinal band on middle and yellow markings on lateral angles; scutellum black with large, yellow marking medially; forewings black with claval veins yellow except for black marking on basal part of posterior portion, remaining veins pale ivory, cells fuscous except in translucent costal area, first and second apical cells, and appendix; face black except yellow above. Similar to *tessellatus*.



Figs. 56–59. *Colladonus singularis*, n. sp.: 56, male pygofer, lateral view; 57, connective, right style, and aedeagus, dorsal view; 58, aedeagus, lateral view; 59, apex of right style, dorsal view.

Head with anterior margin produced, apex rounded.

MALE.—Pygofer in lateral view with acutely angled caudal margin, pygofer spine moderately long and arising from apex of caudal margin, spine curved mesad and directed caudadorsad (Fig. 60); aedeagus in lateral view with short, distal, bifurcated processes, not reaching midlength of shaft (Fig. 62), processes crossing over in dorsal view (Fig. 61), gonopore at midlength of shaft; connective long, nearly reaching to apex of style (Fig. 61); style with broad stylar shaft, curved laterad, outer lateral margin serrate, stylar spine very small, blunt distally and projecting laterally (Fig. 63).

FEMALE.—Unknown.

HOLOTYPE (male).—MEXICO: D.F., Desierto de los Leones, 9,600 ft, 6.VII.1961, George W. Byers (KU).

REMARKS.—This unusual, marked species can be distinguished from *tessellatus* by the distinctive markings on the pronotum and

clavus; the broad, curved stylar shaft; the shorter, distal, bifurcated processes of the aedeagus; and the gonopore at midlength of the shaft.

Colladonus clathrus (DeLong)

Figs. 64–68

Idiodonus clathrus DeLong 1946:28 [Holotype ♀ (OSU) (examined).]

Colladonus clathrus: Nielson 1957:51

Idiodonus clathrus: Metcalf 1967:1288

Idiodonus clathrus: DeLong 1984:11

Idiodonus turpiter DeLong 1946:28 [Holotype ♀ (OSU) (examined).] New synonymy

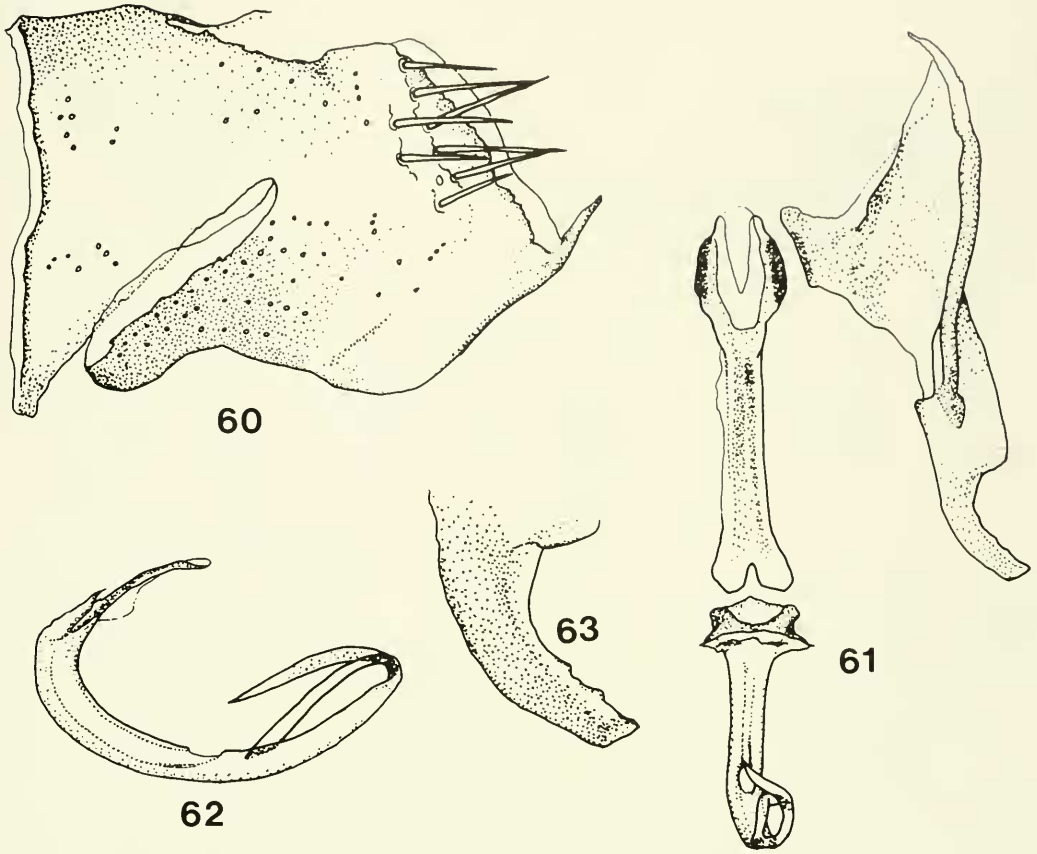
Colladonus turpiter: Nielson 1957:51

Idiodonus turpiter: Metcalf 1967:1303

Idiodonus turpiter: DeLong 1984:10

LENGTH.—Male, 4.7–4.9 mm; female, 5.0–5.2 mm.

General color tawny with fuscous markings on disc of crown and forewings of mature specimens; crown with two distinctive, black, handlebar-shaped markings on anterior margin; pronotum without transverse band. Similar in general habitus to *anademus* (DeLong)



Figs. 60–63. *Colladonus trabilis*, n. sp.: 60, male pygofer, lateral view; 61, connective, right style, and aedeagus, dorsal view; 62, aedeagus, lateral view; 63, apex of right style, enlarged dorsal view.

but with distinctive male genitalia.

Head with anterior margin not produced, apex rounded.

MALE.—Pygofer in lateral view with long, robust spine arising from middle of caudal margin and projecting caudodorsally (Fig. 64); aedeagus in lateral view with distal, bifurcated processes more than 1/2 half as long as shaft, reflexed at distal half (Fig. 66), processes parallel in dorsal view except for distal third (Fig. 68), gonopore distad of midlength of shaft; connective long, extending beyond apex of style (Fig. 65); style with narrow styler shaft, inner lateral margin serrate, outer one smooth, styler spine broad, projecting laterally.

FEMALE.—Seventh sternum with broad, V-shaped, median emargination, caudal margin on either side convex.

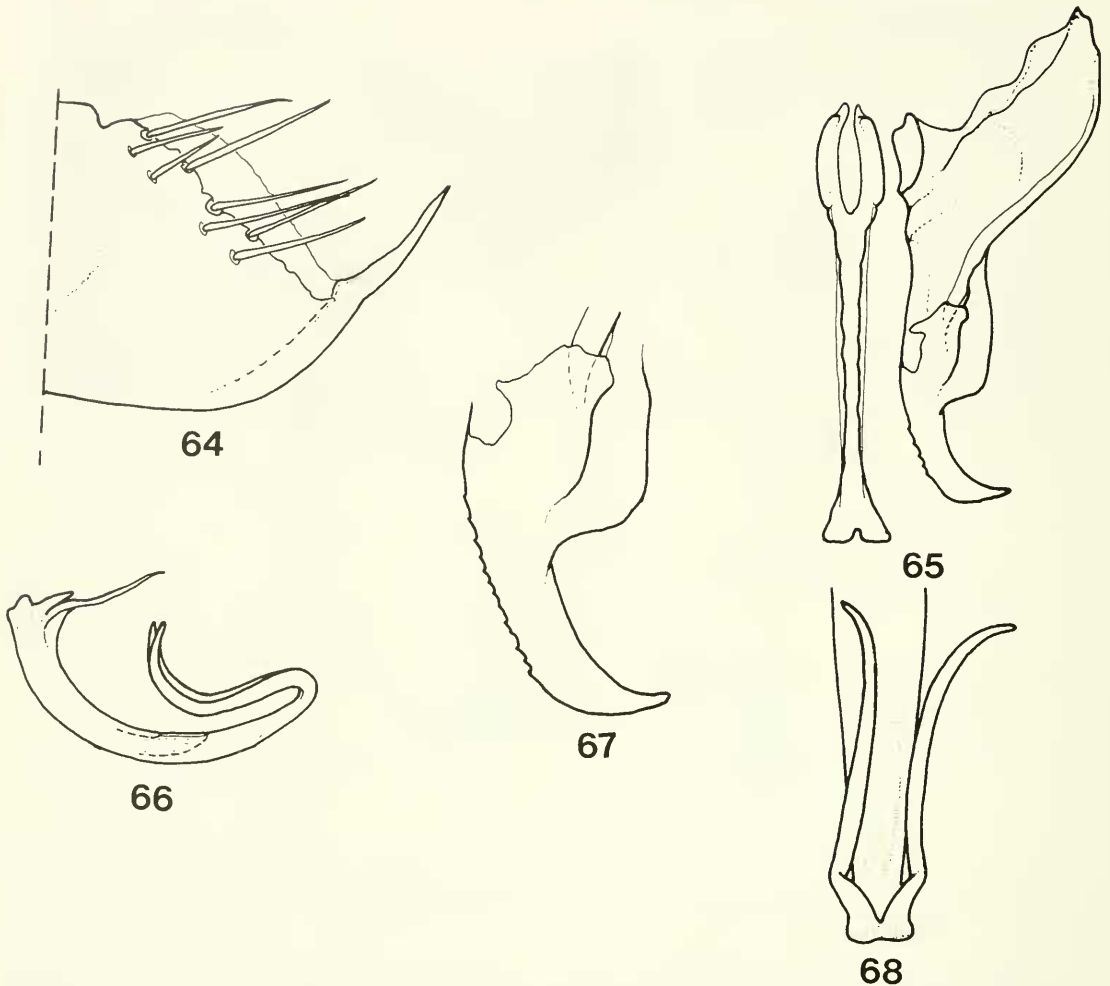
DISTRIBUTION.—This species appears to be restricted to the Mexican state of Distrito

Federal.

HOST.—Unknown.

REMARKS.—The female holotype and male allotype of *clathrus* appear to be properly associated. The female holotype of *turpiter* is identical with the female holotype of *clathrus*, based on similar color patterns (handle-bar-shaped markings on anterior margin of crown) and configuration of the seventh sternum. Although DeLong did not designate an allotype of *turpiter* in his description of that species, a specimen so labeled was found and examined. This specimen could not be associated with the female holotype of *turpiter* but is identical in color patterns and male genitalia to the male allotype of *nigridens*, which is treated as a junior synonym of *albocinctus* in this paper.

From *anademus*, to which it is similar in general habitus, *clathrus* can be separated



Figs. 64–68. *Colladonus clathrus* (DeLong): 64, male pygofer, lateral view; 65, connective and right style, dorsal view; 66, aedeagus, lateral view; 67, apex of right style, enlarged dorsal view; 68, apex of aedeagus and distal processes, enlarged dorsal view.

from all known Mexican and Central American species by the reflexed, distal, bifurcated aedeagal processes.

Colladonus beameri (Ball)

Figs. 69–75

Idiodonus beameri: Ball 1937:28 [Holotype ♀ (USNM) (examined).]

Idiodonus beameri: DeLong 1946:17

Colladonus beameri: Oman 1949:125

Colladonus beameri: Nielson 1957:45

Colladonus beameri: Metcalf 1967:1244

Idiodonus beamerellus: DeLong 1983:92 [Invalid replacement name for nonexistent species, *Idiodonus beameri* DeLong 1946:17 nec *Idiodonus beameri* Ball 1937:28.]

Idiodonus beamerellus: DeLong 1984:10

Idiodonus marginatus: DeLong 1983:90 [Holotype ♂

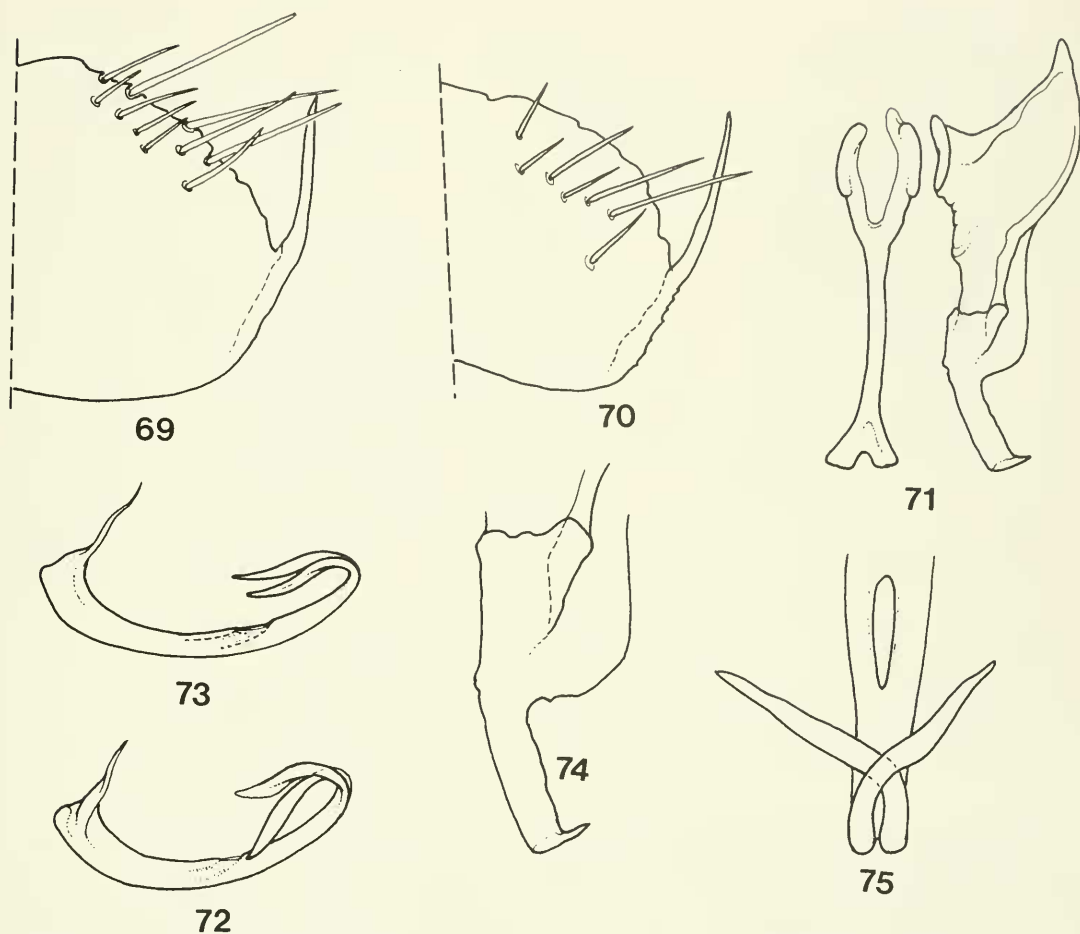
(OSU) (examined).] New synonymy
Idiodonus marginatus: DeLong 1984:10

LENGTH.—Male, 4.2–4.6 mm; female, 5.0–5.3 mm.

General color tawny throughout with black spots along anterior margin of crown, spots sometimes numbering as many as eight, four on anterior margin and two each above and below margin next to eye, spots sometimes connected. Similar in general habitus to *incidus* (DeLong) but larger and with additional spots on crown and distinctive male genitalia.

Head with anterior margin not produced, apex rounded.

MALE.—Pygofer in lateral view with very



Figs. 69–75. *Colladonus beameri* (Ball): 69, male pygofer, lateral view; 70, male pygofer (holotype of *marginatus*), lateral view; 71, connective and right style, dorsal view; 72, aedeagus, lateral view; 73, aedeagus (holotype of *marginatus*), lateral view; 74, apex of right style, enlarged dorsal view; 75, apex of aedeagus and distal processes, enlarged dorsal view.

long spine, exposed length about as long as fused basal half (Figs. 69, 70); aedeagus in lateral view with short, bifurcated distal processes, processes reaching to gonopore (Fig. 72, 73), crossing over in dorsal view (Fig. 75), gonopore distad of middle of shaft; connective long, extending to or slightly beyond apex of style (Fig. 71); style with long stylar shaft, lateral margins smooth, stylar spine very short and projecting laterally (Fig. 74).

FEMALE.—Seventh sternum with subtruncate caudal margin, with shallow, V-shaped emargination medially.

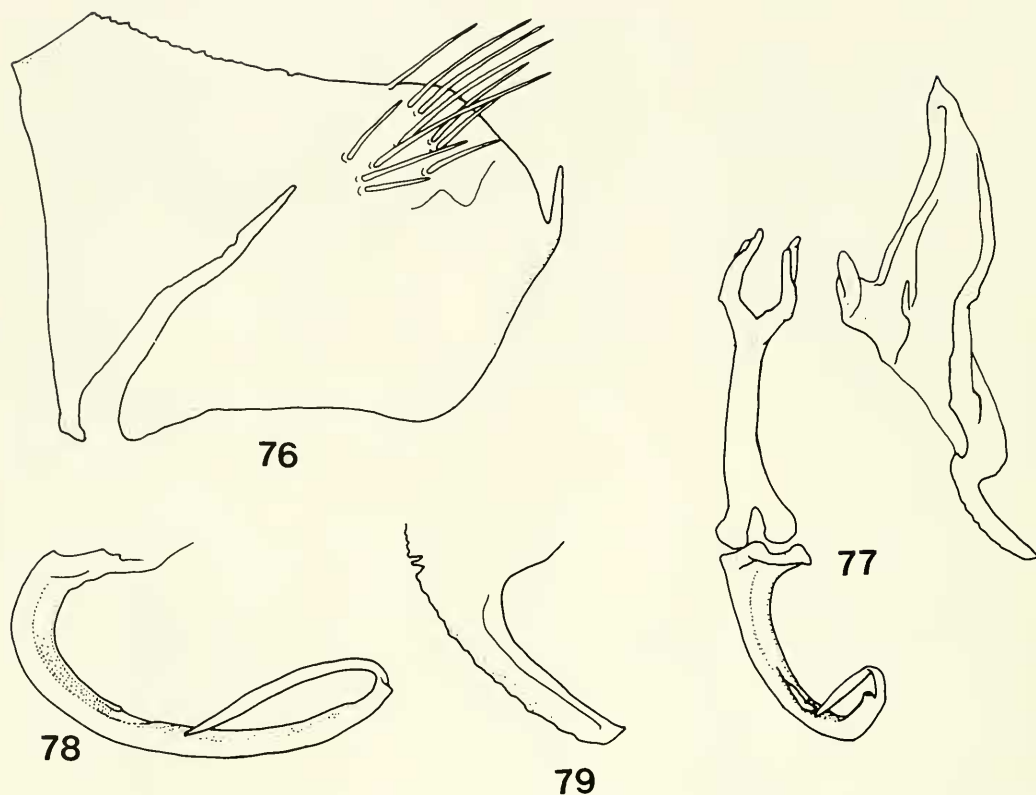
DISTRIBUTION.—This is a widespread species known from the Mexican states of Michoacán, Distrito Federal, Puebla, Hidalgo,

Veracruz, Jalisco, and Morelos, and from the state of Arizona.

HOST.—Specimens were collected from pine at elevations from 5,500 to 9,800 feet during October in Mexico (DeLong 1946)

REMARKS.—DeLong (1983) proposed *beamerellus* as a replacement name for his supposed “*beameri* DeLong” treated as *beameri* Ball in his 1946 paper. That action was actually based on a nonexistent species.

The male holotype of *marginatus* is identical to authentically determined males of *beameri*. From *incidus*, to which it is similar in general habitus, *beameri* can be distinguished by the eight spots on the anterior margin of the crown and by the very long pygofer spine.



Figs. 76-79. *Colladonus tessellatus*, n. sp.: 76, male pygofer, lateral view; 77, connective, right style, and aedeagus, dorsal view; 78, aedeagus, lateral view; 79, apex of right style, enlarged dorsal view.

Colladonus tessellatus, n. sp.

Figs. 76-79

LENGTH.—Male, 4.3 mm; female, 4.7-4.9 mm.

Color tan to tannish brown with dark brown markings on dorsum; crown with two large, subquadrate spots on anterior margin, small spot in ocellocular area next to lateral frontal suture, two large spots on disc separated widely at middle; pronotum with dark, mosaic markings separated by narrow, tannish line medially; forewings with dark markings in cells, veins mostly tannish to yellow tannish; face tan with dark markings. Similar to *trabilis* in male genitalic characters.

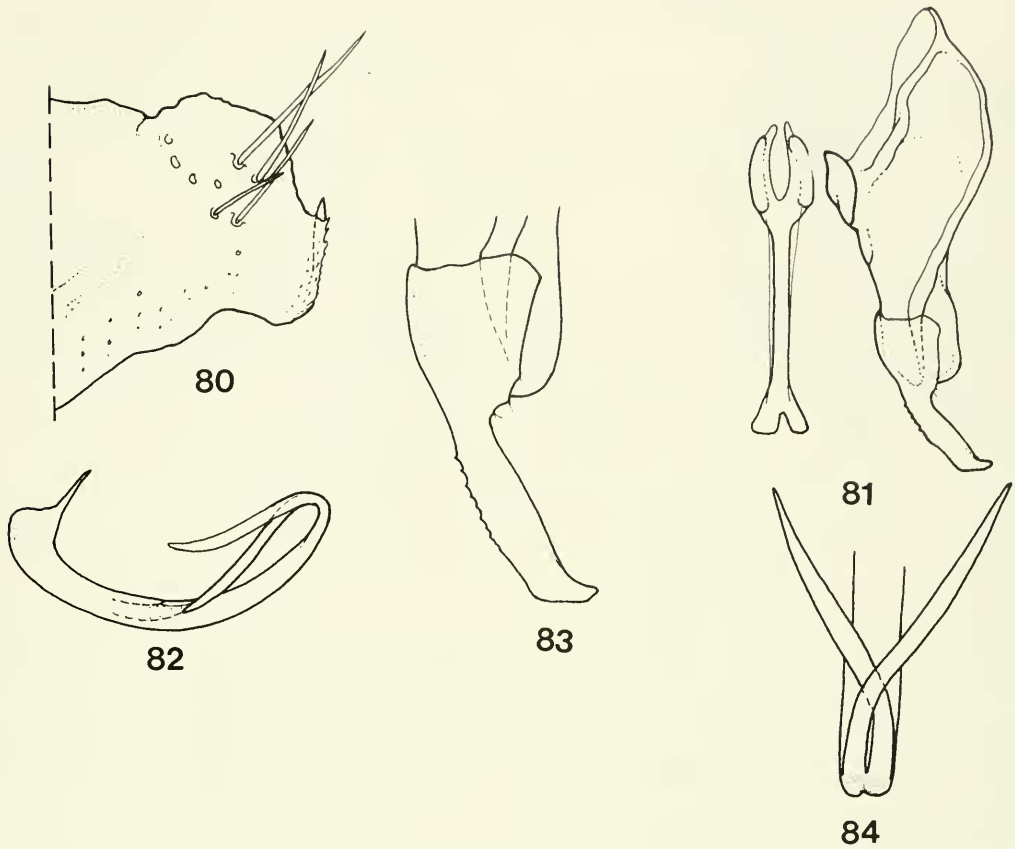
Head with anterior margin produced, apex rounded.

MALE.—Pygofer in lateral view with caudal margin obtusely angled, pygofer spine moderately long, arising at apex of caudal margin above middle and slightly curved dorsad (Fig. 76); aedeagus in lateral view narrow along

major portion of shaft, with moderately long, distal, bifurcated process (one process broken off in holotype) (Fig. 78) reaching to about midlength of shaft, gonopore basad of midlength of shaft; connective short, not reaching apex of style (Fig. 77); style with narrow stylar shaft, inner lateral margin serrate, slightly tapered distally and curved laterad, stylar spine very small (Fig. 79).

FEMALE.—Seventh sternum with truncate caudal margin, very small, shallow excavation medially.

HOLOTYPE (male).—MEXICO: Mex. D.F., 5 mi west of Tlamacas, P.N. Ixtapopo, 10,000 ft, 31.V.1974, C. W. and L. O'Brien and Marshall (BYU), female allotype, same data as holotype (BYU). Paratypes: one male and one female, same data as holotype (author's collection); three females, same data as holotype (BYU); one female, 11 mi east of Amecameca, 10,300 ft, 31.V.1974, C. S. and L. O'Brien and Marshall; one female, P.N., Cumbres de



Figs. 80–84. *Colladonus anademus* (DeLong): 82, male pygofer, lateral view; 81, connective and right style, dorsal view; 82, aedeagus, lateral view; 83, apex of right style, enlarged dorsal view; 84, apex of aedeagus and distal processes, enlarged dorsal view.

Ajusco, Llano de Cantimplora, 3,340 m, 4.IX.1982, C. W. and L. B. O'Brien and G. J. Wibmer (CAS).

REMARKS.—From *trabilis*, to which it is similar in certain male genitalic features, *tesellatus* can be separated by the gonopore, which is basad of midlength of the aedeagal shaft, by the short connective, and by the slender stylar shaft, which is serrate on the inner lateral margin.

Colladonus anademus (DeLong)

Figs. 80–84

Idiodonus anademus DeLong 1946:29 [Holotype ♀ (OSU) (examined).]

Colladonus anademus: Nielson 1957:51

Idiodonus anademus: Metcalf 1967:1286

Idiodonus anademus: DeLong 1983:90

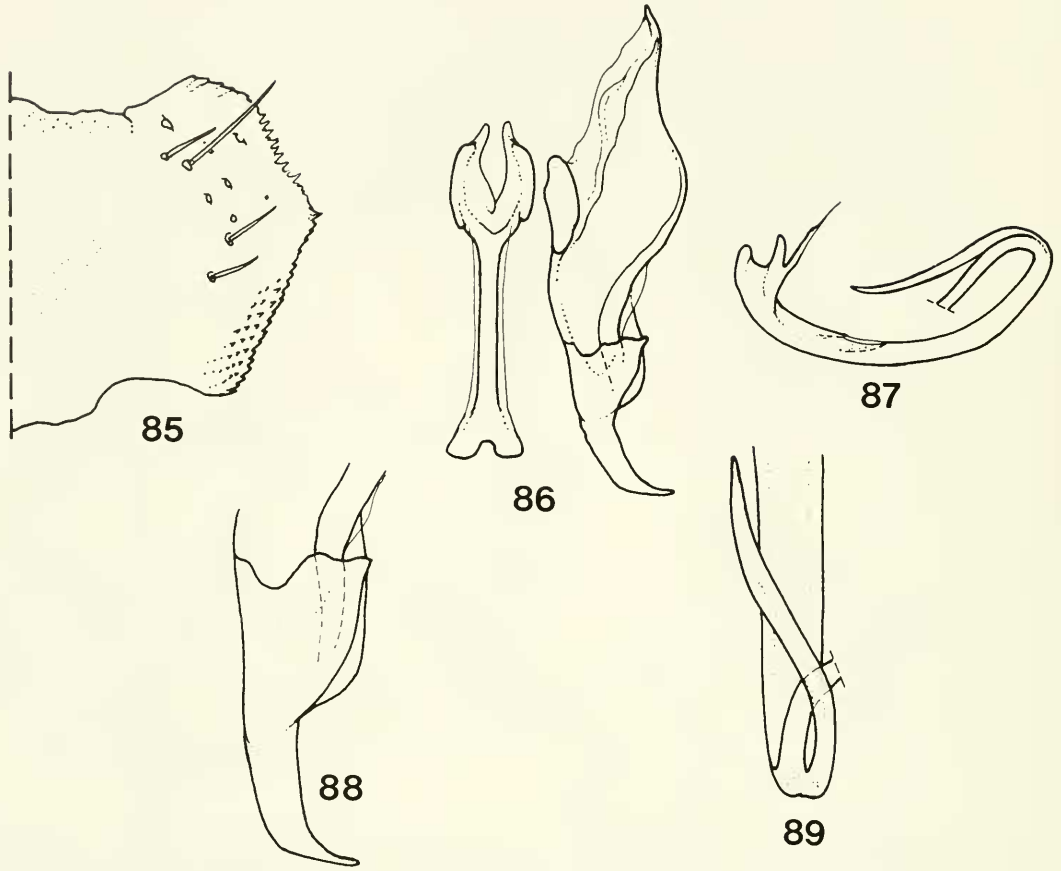
Idiodonus anademus: DeLong 1984:10

LENGTH.—Male, 4.8 mm; female, 4.9–5.1 mm.

General color tawny throughout with two distinct, black, elongate, triangular spots on anterior margin of crown, small black markings on disc of crown and pronotum. Similar in general habitus to *incidus* (DeLong) but with distinctive male genitalia.

Head with anterior margin not produced, apex rounded.

MALE.—Pygofer in lateral view with caudoventral margin produced distally, subtruncate and serrate (Fig. 80), pygofer spine very short, basal 3/4 sclerotized and fused to inner mesal margin of pygofer, spine projecting dorsad (Fig. 80); aedeagus in lateral view with slender, distal, bifurcated processes reaching to midlength of shaft (Fig. 82), crossing over in dorsal view (Fig. 84), gonopore at about middle of shaft; connective long, nearly reaching to apex of style (Fig. 81); style with long, narrow stylar shaft, inner lateral margin



Figs. 85–89. *Colladonus incidus*: 85, male pygofer, lateral view; 86, connective and right style, dorsal view; 87, aedeagus, lateral view; 88, apex of right style, enlarged lateral view; 89, apex of aedeagus and distal processes, enlarged dorsal view.

serrate, outer one smooth, stylar spine short, blunt, and directed laterad.

FEMALE.—Seventh sternum with caudal margin convex, shallow, narrow, V-shaped excision medially.

HOST.—Specimens were collected on pine by DeLong (1946).

DISTRIBUTION.—This species is known only from the Mexican state of Distrito Federal.

REMARKS.—The female holotype and male allotype appear to be correctly associated. This species, similar to *incidus*, can be distinguished by the produced, subtruncate caudoventral margin of the pygofer, by the short, dorsally directed pygofer spine, and by the long, narrow stylar shaft.

Colladonus incidus (DeLong), n. comb.

Figs. 85–89

Idiodonus incidus DeLong 1946:29 [Holotype ♀ (OSU)

(examined).]

Idiodonus incidus: Metcalf 1967:1299

Idiodonus incidus DeLong 1984:11

Idiodonus pallidus: DeLong 1983:90 [Holotype ♂ (OSU)

(examined).] New synonymy

Idiodonus pallidus: DeLong 1984:10

LENGTH.—Male, 4.8 mm; female, 4.9–5.1 mm.

General color tawny throughout with two small, black spots on anterior margin of crown. Similar in general habitus to *anademus* but with distinctive male genitalia.

Head with anterior margin produced, apex angled.

MALE.—Pygofer in lateral view with broadly angled, serrate caudal margin, very small spine at middle of margin, spine directed distad (Fig. 85); aedeagus with slender, distal, bifurcated processes extending beyond midlength of shaft (Fig. 87), crossing over in

dorsal view (Fig. 89), gonopore at midlength of shaft; connective short, not reaching to apex of style (Fig. 86); style with slender stylar shaft, lateral margins smooth, stylar spine long, directed laterad (Fig. 88).

FEMALE.—Seventh sternum with broadly convex caudal margin, very small indentation medially.

DISTRIBUTION.—This species is known only from the Mexican state of Distrito Federal.

HOST.—Specimens were collected from unspecified trees or shrubs at 8,500 feet during September and October in Mexico (DeLong 1946).

REMARKS.—No males of *incidus* were described in the type series. The female holotype of *incidus* was associated with the male holotype of *pallidus* and is identical with the female allotype of *pallidus*. The latter name is the more recent and is, therefore, suppressed as a junior synonym of *incidus*.

From *anademus*, to which it is similar, *incidus* can be easily separated by the serrated, broadly angled caudal margin of the pygofer with its very small, distally directed spine, by the shorter connective, and by the longer, distal, bifurcated processes of the aedeagus.

Paracolladonus, new genus

TYPE-SPECIES: *Idiodonus insculptus* DeLong 1946:25.

Similar to *Colladonus* Ball and *Dolyobius* Linnavuori in general habitus but with distinctive male genitalia. General color tannish brown in female to black in male with dark markings on crown, pronotum, and scutellum.

Head slightly wider than pronotum, anterior margin broadly rounded and slightly produced medially; pronotum with posterior margin broadly concave; scutellum as in *Colladonus*; clypeus broad anteriorly; venation of forewing similar to *Colladonus*, inner antepical open basally.

Male pygofer with large spine on caudoventral margin, setose caudodorsally; aedeagus long, broadly recurved, somewhat compressed dorsoventrally, with paired, recurved, short, distal processes, processes sometimes with secondary process medially, gonopore subapical on dorsal surface; connective long and narrow; style broad at basal half, with foot-shaped apex.

Paracolladonus insculptus

(DeLong), n. comb.

Figs. 90–94

Idiodonus insculptus: DeLong 1946:25 [Holotype ♀ (OSU) (examined).]

Idiodonus insculptus: Metcalf 1967:1299

Idiodonus insculptus: DeLong 1984:11

LENGTH.—Male, 5.3 mm; female, 5.7–5.9 mm.

Long, slender species with dark markings on crown, pronotum, and scutellum; pronotum black in male, light brown in female with dark markings on anterior margin; forewing light to dark brown with yellowish veins.

Male pygofer with very long, stout spine on caudoventral margin, spine projecting caudodorsad, numerous setae confined to caudodorsal area (Fig. 90), aedeagus in lateral view long, recurved, with distal processes short, broad medially (Fig. 92), sometimes with secondary process medially (Fig. 94) (if absent, basal attachment apparent in dorsal view), curved dorsad in lateral view, slightly flared laterally in dorsal view (Fig. 93), shaft somewhat flattened dorsoventrally (Fig. 94), gonopore subapical on dorsal surface; connective long and narrow, reaching to or beyond apex of style (Fig. 91); style with narrow ridge or flange from inner lateral margin above preapical lobe to apex of style in dorsal view (Fig. 92).

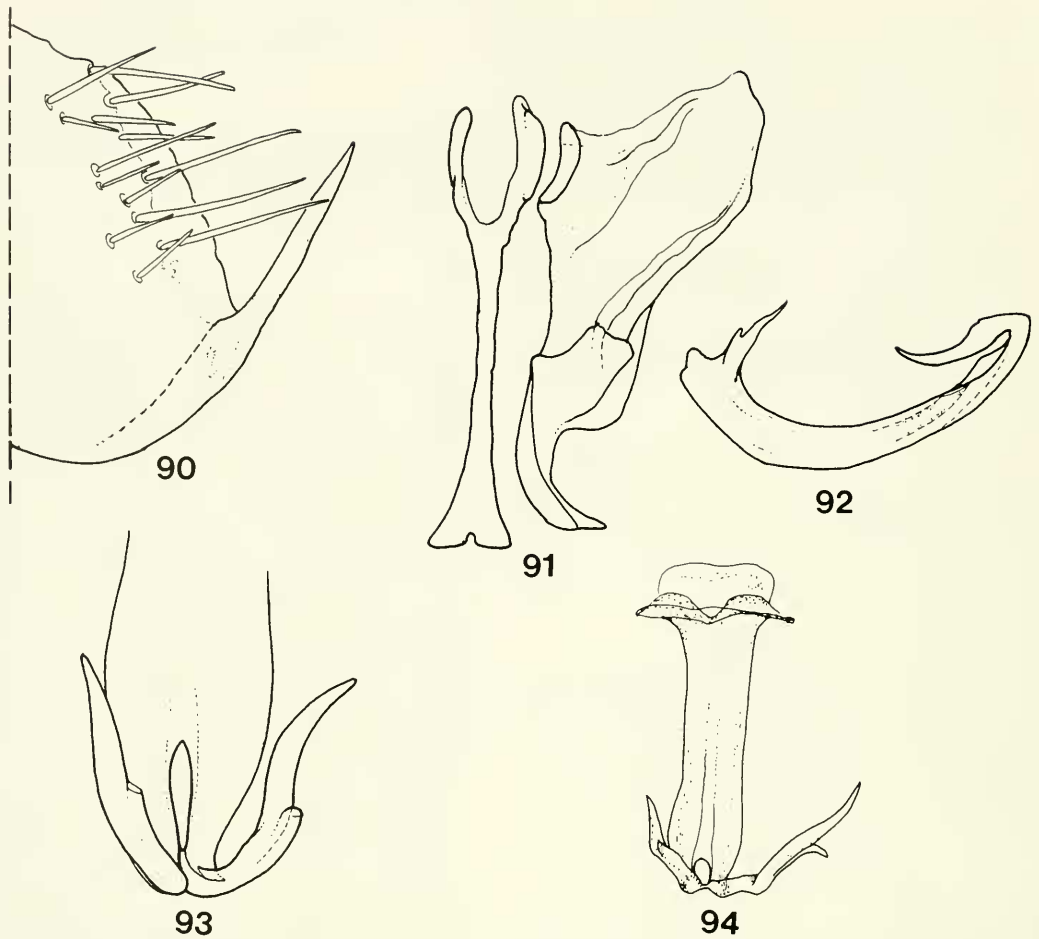
REMARKS.—This is the only known species assigned to the genus. It is known from the states of Distrito Federal and Morelos in Mexico. DeLong (1946) collected specimens from pine at 10,000 feet in September and October. A pair of specimens were collected on the Cuernavaca road in Mexico by Ball and Stone.

Paranurenus, new genus

TYPE-SPECIES: *Idiodonus latidens* DeLong 1946:26

Similar to *Colladonus* in general habitus and *Nurenus* in some male genital characters. General color tawny with black markings on head. Pronotum with ivory, transverse band, forewings with ivory stripe on claval suture.

Head about as wide as pronotum; crown produced, longer medially than next to eye; pronotum and scutellum as in *Colladonus*; forewing as in *Colladonus*; venation partially obscured; clypeus long; clypellus long and narrow.



Figs. 90-94. *Paracolladonus insculptus* (DeLong): 90, male pygofer, lateral view; 91, connective and right style, dorsal view; 92, aedeagus, lateral view (allotype); 93, aedeagus, enlarged dorsal view (allotype); 94, aedeagus, dorsal view (specimen from Cuernavaca Road, Mex.).

Male pygofer without caudal spine, margin obliquely truncate as in *Nurenus*; aedeagus small, recurved, flattened dorsoventrally with pair of short, acuminate distal processes; gonopore subapical on dorsal surface; connective and style as in *Colladonus*.

Paranurenus is represented by a single known species from Mexico.

From *Colladonus*, to which it is similar in general habitus, *Paranurenus* can easily be differentiated by the flattened aedeagus and by the absence of a pygofer spine. The head characters and the flattened shaft of the aedeagus will differentiate the genus from *Nurenus*.

Paranurenus latidens (DeLong), n. comb.

Figs. 95-98

Idiodonus latidens: DeLong 1945:26 [Holotype ♀ (OSU) (examined).]

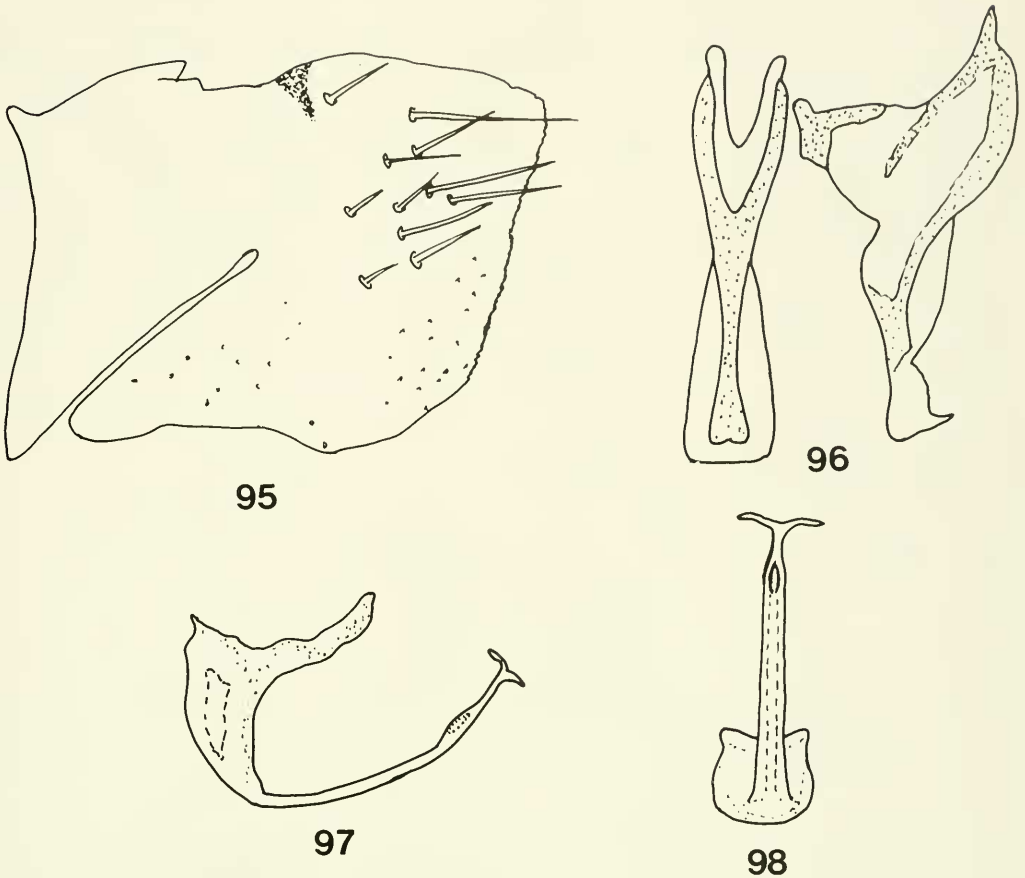
Idiodonus latidens: Metcalf 1967:1300

Idiodonus latidens DeLong 1984:11

LENGTH.—Male, 4.4-4.5 mm; female, 4.8-5.1 mm.

Color tawny, crown ivory with two black spots on anterior margin and narrow, black, transverse band on disc between eyes; pronotum tawny with narrow, ivory, transverse band above middle; scutellum tawny; forewing tawny with ivory on claval suture extending to pronotal band, fuscous band above costal area; face ivory to tawny with black markings.

MALE.—Pygofer in lateral view with obliquely truncate caudal margin, pygofer spine absent, macrosetae on caudodorsal quadrant (Fig. 95); aedeagus in lateral view recurved, socle large, shaft slender, flattened



Figs. 95–98. *Paranurenus latidens* (DeLong): 95, male pygofer, lateral view; 96, connective and right style, dorsal view; 97, aedeagus, lateral view; 98, aedeagus, ventral view.

dorsoventrally (Fig. 97) with pair of short, acuminate distal processes, processes directed laterad in ventral view (Fig. 98); gonopore subapical on dorsal surface of shaft; connective long and narrow, extending just beyond apex of style (Fig. 96); style with stylar shaft short and enlarged distally, stylar spine prominent, subapical, and projecting laterally (Fig. 96).

FEMALE.—Seventh sternum with short, median, spatulate process on caudal margin.

REMARKS.—This species has no known close relatives. The styles are typical of many species of *Colladonus*, and the aedeagus, except for its flattened condition, is similar in configuration to *Nurenus*. The head characters and general habitus are similar to species of *Colladonus*.

The species is known from the states of Michoacán and Distrito Federal in Mexico,

and occur at elevations from 5,000 to 8,000 feet in February and September on unspecified shrubs or trees (DeLong 1946).

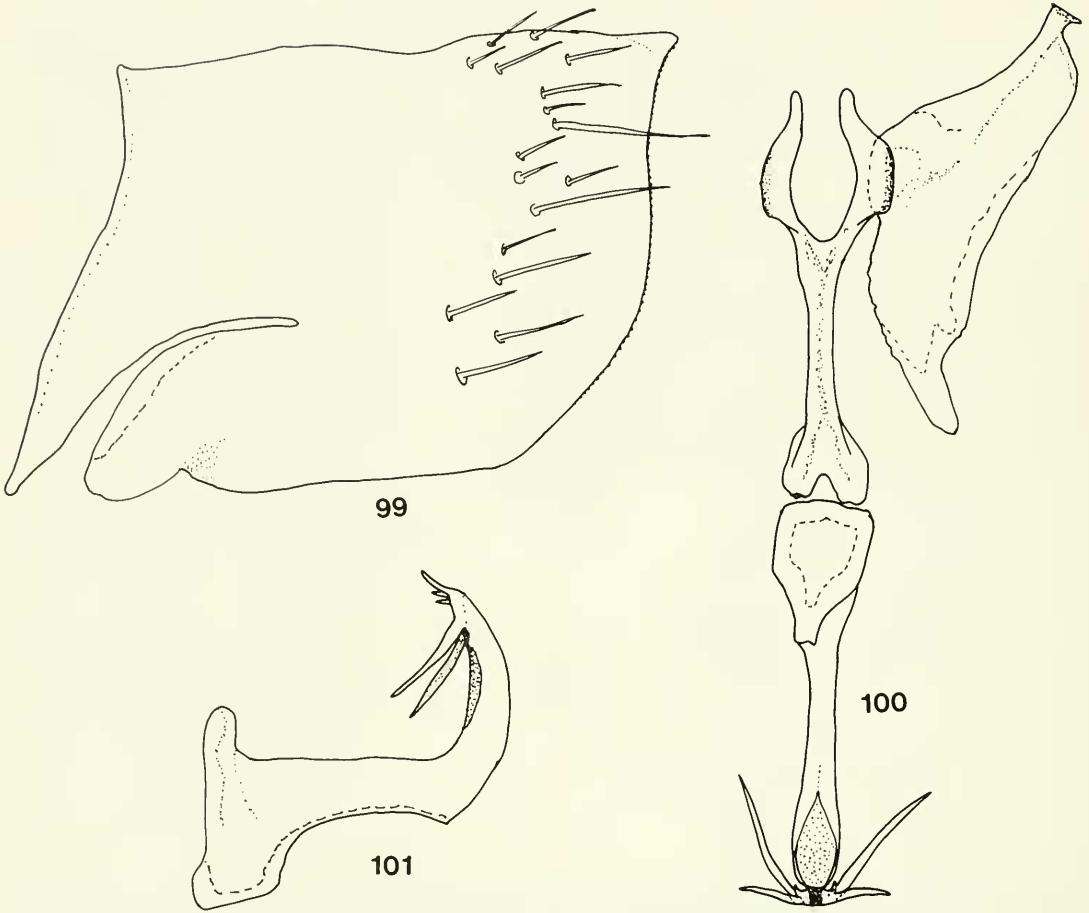
Jaacunga, new genus

TYPE-SPECIES: *Idiodonus vinculus* DeLong 1945:15

Similar to *Paracolladonus* in general habitus but more robust with slightly wider head and distinctive male genitalia. General color tawny with markings on crown, narrow band on pronotum and iridescent forewings.

Head wider than pronotum, anterior margin broadly rounded and slightly produced as in *Paracolladonus*; pronotum large, posterior margin broadly and shallowly concave; forewing venation as in *Paracolladonus*.

Male pygofer without caudal spine, setose submarginally; aedeagus stout with enlarged socle, recurved at apical third with terminal



Figs. 99–101. *Jaacunga vinculus* (DeLong): 99, male pygofer, lateral view; 100, connective, right style, and aedeagus, dorsal view; 101, aedeagus, lateral view.

processes, gonopore large, subapical on dorsal surface; connective Y-shaped; style without apical spine. Female seventh sternum with median spatulate process. Two species, described below, are assigned to the genus.

Jaacunga vinculus (DeLong), n. comb.

Figs. 99–101

Idiodonus vinculus: DeLong 1946:15 [Holotype ♀ (OSU) (examined).]

Idiodonus vinculus: Metcalf 1967:1304

Idiodonus vinculus DeLong, 1984:10

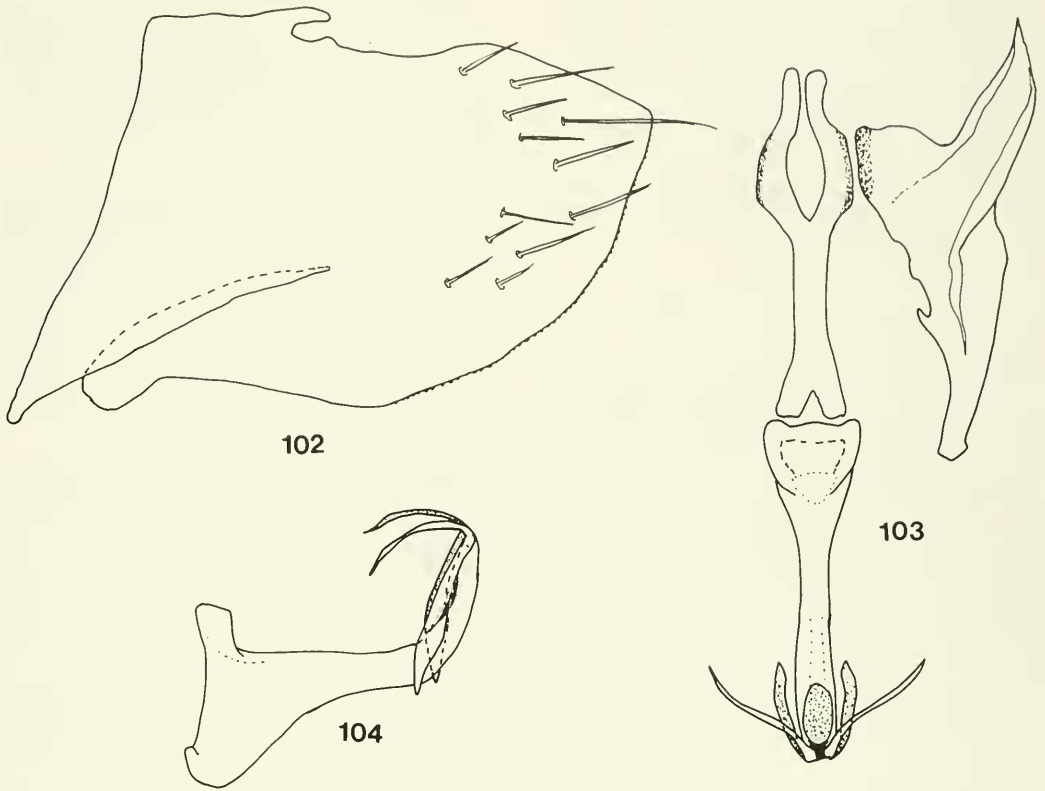
LENGTH.—Male, 5.8 mm; female, 6.4 mm.

Long, robust species with two spots on anterior margin of crown and narrow, black, transverse, irregular band on disc in male, less marked in female; pronotum with narrow, yellow or ivory, transverse band near middle and similar, less pronounced band on posterior margin; forewing iridescent, veins black

to tawny. Similar to *spatulatus* in male genital character.

MALE.—Pygofer without caudal spine, macrosetae on submargin from dorsal to ventral margin (Fig. 99); aedeagus in lateral view stout, socle enlarged, shaft tubular, curved dorsad at apical half with six terminal spines, two long and projecting anteroventrally, two moderately long and projecting anterodorsad, and two very short and projecting anteriorly (Fig. 101), gonopore large, subapical on dorsal surface; connective stout, Y-shaped, extending slightly beyond apex of style (Fig. 100); style similar to *Colladonus* but broader at basal two-thirds, stylar apex narrow, without distinct stylar spine, apex obliquely truncate.

FEMALE.—Seventh sternum with short, apically bifid, medial projection on caudal margin, shallowly excavated on either side of projection.



Figs. 102–104. *Jaacunga spatulatus* (DeLong): 102, male pygofer, lateral view; 103, connective, right style, and aedeagus, dorsal view; 104, aedeagus, lateral view.

REMARKS.—This species is known from the female holotype and male allotype specimens collected at Jacala, Hidalgo, Mexico, and Aca pulco Road, Mexico, respectively. Other specimens that I have not seen are reported from Mexico City and Jalapa Road in Mexico by DeLong (1946). All specimens were collected from September to October at elevations from 5,000 to 8,500 feet from unspecified shrubs or trees.

Jaacunga vinculus can be distinguished from *spatulatus* by its six terminal spines, which differ in their configuration, and by the shape of the apex of the style.

Jaacunga spatulatus (DeLong), n. comb.

Figs. 102–104

Idiodonus spatulatus DeLong 1946:15 [Holotype ♀ (OSU) (examined).]

Idiodonus spatulatus: Metcalf 1967:1302

Idiodonus spatulatus DeLong 1984:10

Idiodonus rubellus DeLong 1946:15 [Holotype ♀ (OSU)

(examined).] New synonymy

Idiodonus rubellus: Metcalf 1967:1301

Idiodonus rubellus DeLong 1984:9

LENGTH.—Male, 5.5 mm; female, 5.5–5.8 mm.

Similar in general habitus to *vinculus* but with distinctive male genitalia.

Male pygofer without caudal spine, macrosetae submarginal in caudodorsal area (Fig. 102); aedeagus in lateral view stout but not as robust as in *vinculus*, socle enlarged, shaft similar to *vinculus*, with four terminal processes, longest pair projecting ventrally and broad before gradually pointed apex, second pair shorter, projecting anteriorly with tips curved ventrally (Figs. 103, 104); gonopore large, subapical on dorsal surface; connective similar to *vinculus* except shorter, not reaching apex of style (Fig. 103); style as in *vinculus* except apex curved mesally and rounded distally.

REMARKS.—*Jaacunga spatulatus* is known from the type series collected from Mexico City and from the female holotype of *rubellus*, which has the same type locality as *spatulatus*. The specimens were collected from unspecified shrubs at elevations of 7,500 to 8,500 feet in September (DeLong 1946). The species can be distinguished from *vinculus* by the shape of four terminal spines on the aedeagus and by the shape of the stylar apex.

Paracrassana, new genus

TYPE-SPECIES: *Idiodonus nigrifrons* DeLong 1983:91

Near *Crassana* DeLong & Heishberger but with distinctive head, facial, and genital features. General color tawny with black markings on head and thorax, face black.

Head slightly wider than pronotum, anterior margin slightly angled and produced medially, not rounded to face, clearly demarcated but not carinate, narrow, transverse impression submarginally between ocelli, surface shiny, striate longitudinally; ocellus remote from eye; forewing as in *Crassana*; clypeus broad anteriorly, about as wide as long; clypellus long, lateral margins expanded distally.

Male pygofer long, with deep incision basally to near middle, dorsal margin broadly excavated near middle, row of fine teeth on ventral margin; aedeagus symmetrical, long, narrow, nearly tubelike, socle basal, gonopore terminal, sclerotized endotheca basad of aedeagal shaft; connective very short as in *Crassana* and *Neocrassana* Linnavuori; plate long, triangular, tenth segment sclerotized laterally.

Paracrassana is represented by a single known species from Mexico. It can be distinguished from *Crassana* by the narrow demarcation between the crown and face, the narrow impression submarginally on the crown, the long pygofer with basal incision and tubular aedeagus. From *Neocrassana*, it can be distinguished by the remote position of the ocelli from eyes, the position of the socle on the aedeagus, and characters described above.

Paracrassana nigrifrons (DeLong), n. comb.
Figs. 105–107

Idiodonus nigrifrons DeLong 1983:91 [Holotype ♂ (OSU) (examined).]

LENGTH.—Male, 5.4 mm.

Long, robust species, crown with irregular, narrow, black, transverse band between ocelli; pronotum with black markings on anterior lateral angles; face black except for narrow, yellow anterior margin; forewing iridescent, veins fuscous.

Male pygofer in lateral view long and narrow, macrosetae on distal third except caudal margin, ventral margin with fine spines (Fig. 105); aedeagus long, tubular, curved dorsally at distal third, with subdistal flange laterally on dorsal margin (Fig. 106), gonopore apical, endotheca not forming a loop; connective short, broad; style narrow, with narrowed curved apices.

FEMALE.—Unknown.

REMARKS.—This species is known only from the male holotype from Huanchinango, Puebla, Mexico. The host is unknown.

The nomenclature of a few species described in *Idiodonus* and *Colladonus* are treated below:

Bonneyana caldwelli (DeLong), n. comb.

Idiodonus caldwelli DeLong 1946:16 [Holotype ♀ (OSU) (examined).]

Idiodonus caldwelli: Metcalf 1967:1288

Idiodonus caldwelli DeLong, 1984:10

Idiodonus apertus DeLong 1946:14 [Holotype ♀ (OSU) (examined).] New synonymy.

Idiodonus apertus: Metcalf 1967:1287

Idiodonus apertus DeLong 1984:10

I have compared dissected specimens of *caldwelli* and *schwartzi* (Ball) and found them to be distinct. Two remaining known species in the genus, *osborni* (Ball) and *terminalis* (Ball), have not been examined; but, based on the original descriptions, they appear to be distinct from *caldwelli*. Further study of the group is warranted, however, including illustrations and descriptions of the male diagnostic characters.

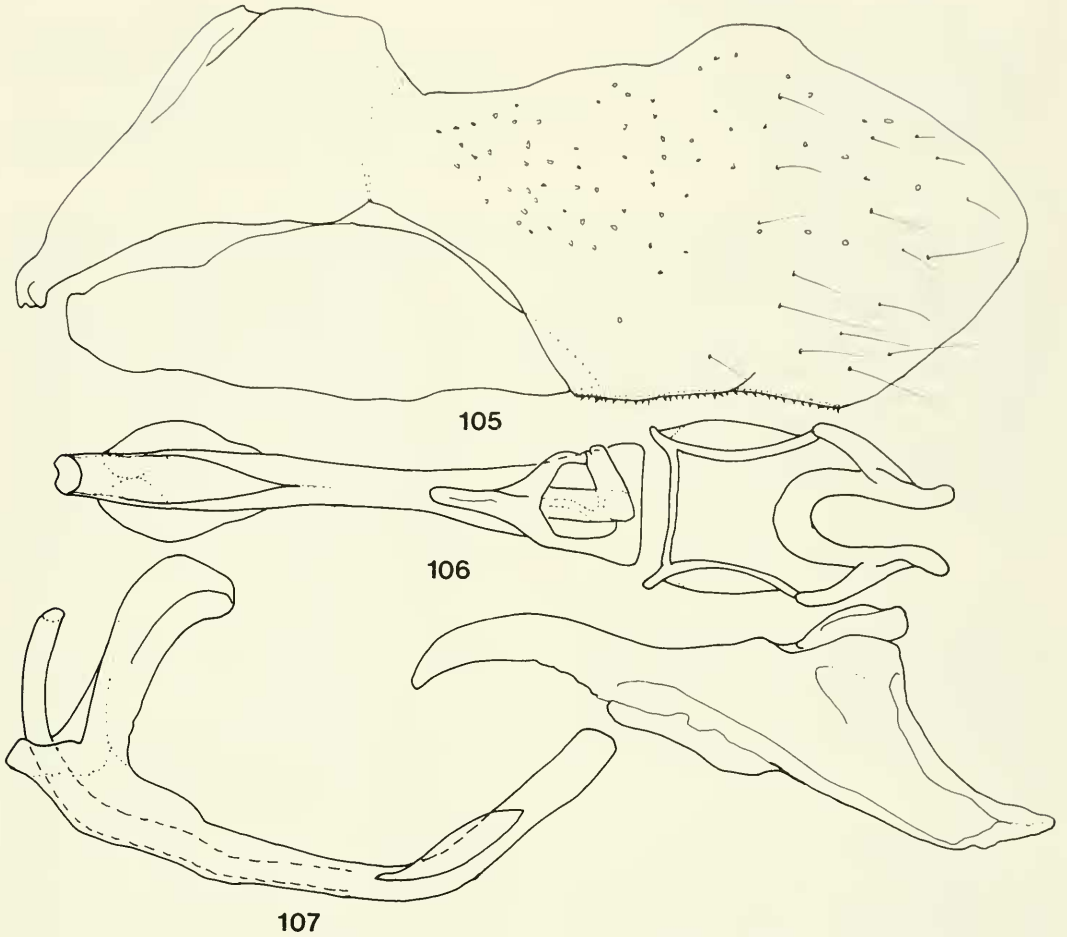
Ollarianus tripartitus DeLong

Ollarianus tripartitus DeLong 1944:398

Idiodonus albifrons DeLong 1983:89 [Holotype ♀ (OSU) (examined).] New synonymy

Idiodonus albifrons DeLong 1984:10

Examination of the female holotype of *I. albifrons* and comparison with specimens of several species of *Ollarianus* show that it belongs in that genus and is identical with *O. tripartitus*. The genus *Ollarianus* has wide



Figs. 105–107. *Paracrassana nigrifrons* (DeLong): 105, male pygofer, lateral view; 106, connective, right style, and aedeagus, dorsal view; 107, aedeagus, lateral view.

distribution from the Nearctic to the Neotropical region and needs revision.

Paratanus costatus (DeLong), n. comb.

Idiodonus costatus DeLong 1984:92 [Holotype ♂ (OSU) (examined).]

This species is close to *Paratanus wygodzinskyi recurvatus* (Linnavuori) but differs from it in color characters. It may be a distinct subspecies of the nominate form or a separate species pending studies of the genus *Paratanus*.

Angulanus DeLong, n. status

Idiodonus subgenus *Angulanus* DeLong 1946:30. Type-species, *Idiodonus incisurus* DeLong 1946:30. [Holotype ♀ (OSU) (examined).]
Idiodonus (*Angulanus*): Metcalf 1967:1304

Idiodonus: DeLong 1984:9. [Inadvertent synonymy of *Angulanus* DeLong in the treatment of the type-species, *incisurus* DeLong, in a key to the species of *Idiodonus*.]

Examination of the genital structures of the male allotype clearly showed that *Angulanus* deserves generic-level rank. The aedeagus is asymmetrical, and the pygofer possesses a prominent spine on the caudal margin, characters that are not descriptive of the genus *Idiodonus*.

Angulanus incisurus (DeLong), n. comb.

Idiodonus incisurus DeLong 1946:30 [Holotype ♀ (OSU) (examined).]
Idiodonus incisurus: DeLong 1946:13, 14
Idiodonus (*Angulanus*) *incisurus*: Metcalf 1967:1304
Idiodonus (*Angulanus*) *incisurus*: DeLong 1984:10

Idiodonus plummeri DeLong

Idiodonus plummeri DeLong 1946:25 [Holotype ♀ (OSU) (examined).]

Idiodonus plummeri: DeLong 1984:11

Idiodonus bakeri: DeLong 1984:26 [Holotype ♀ (OSU) (examined).] New synonymy

Idiodonus bakeri: DeLong 1984:11

The generic placement of this species appears to be correct. No males were described in the type series of *plummeri* or *bakeri*, but a male paratype specimen labeled "*Idiodonus bakeri* DeLong, MB 73, Mexico, A. Damp coll." was found and examined. The genitalic structures clearly show that it belongs in *Idiodonus*. The species was associated with the female holotype of *bakeri*, which was found to be identical with the female holotype of *plummeri*.

Species *incertae sedis*

Three species of *Idiodonus* described by DeLong, *edentulus*, *excavatus*, and *copulus*, are treated herein as *incertae sedis* until males are known and associated with females of these species. *Idiodonus copulus* appears to be close to *Jaacunga* and may belong in that genus.

ACKNOWLEDGMENTS

I thank Dr. Charles A. Triplehorn and Dr. Paul Cwikla, Ohio State University (OSU), for placing on loan nearly the entire type series of all the *Idiodonus* species from Mexico and Central America described by the late Dr. D. M. DeLong. Without this material it would not have been possible to unravel the taxonomic problems involved with the *Idiodonus* and *Colladonus* fauna in that part of the world. I also thank Dr. James P. Kramer, U.S. National Museum, for the loan of the type of *Colladonus delongi* Linnavuori and material of genera related to *Colladonus*.

My appreciation is extended to Jeanette Price and Pamela Scott for the illustrations and to Kaye Thorne for identifying the host plant of a population of the *Colladonus belli* complex. I thank Dr. Leon Hepner for reading the manuscript and offering helpful suggestions to improve its content.

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